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THE PAPER TRADE JOURNAL.

"The Consumption of Paper is the Measure of a People's Culture."

VOLUME XX.—NO. 49. NEW YORK, DECEMBER 5, 1891. WHOLE NUMBER 918.

Trade Topics.

Forming Hollow Ware from Pulp.

Illustrations are given of a machine especially constructed to form hollow ware from a material consisting of a dry mixture of paper or other pulp and a gummy or resinous matter, which may be molded and vulcanized by the heat maintained in the molding surfaces, although the molding surfaces may be provided with means for drainage, such as is commonly employed, when the machine will be adapted for operation upon the ordinary liquid pulp, in which case the means for heating the molding devices may, of course, be omitted.

Figure 1 represents a side elevation of the machine, partly in section; Fig. 2, a horizontal section of the machine, taken on line *z z* of Fig. 1; Fig. 3, a top plan view of the upper portion of the machine; Fig. 4, a horizontal section of the machine, taken on line *y y* of Fig. 1; Fig. 5, a detail sectional view on an enlarged scale of the expansible former or mold and its surrounding parts, showing the sections in an extended position against the material which is to form the pail or other vessel; Fig. 6, a detail view in perspective of one of the sections which constitute the former or inner mold; Fig. 7, a detail plan view of several of said sections, showing their relative position to each other when extended and the guides between them. Fig. 8 represents a horizontal section through the mold section, taken on line *x x* of Fig. 6.

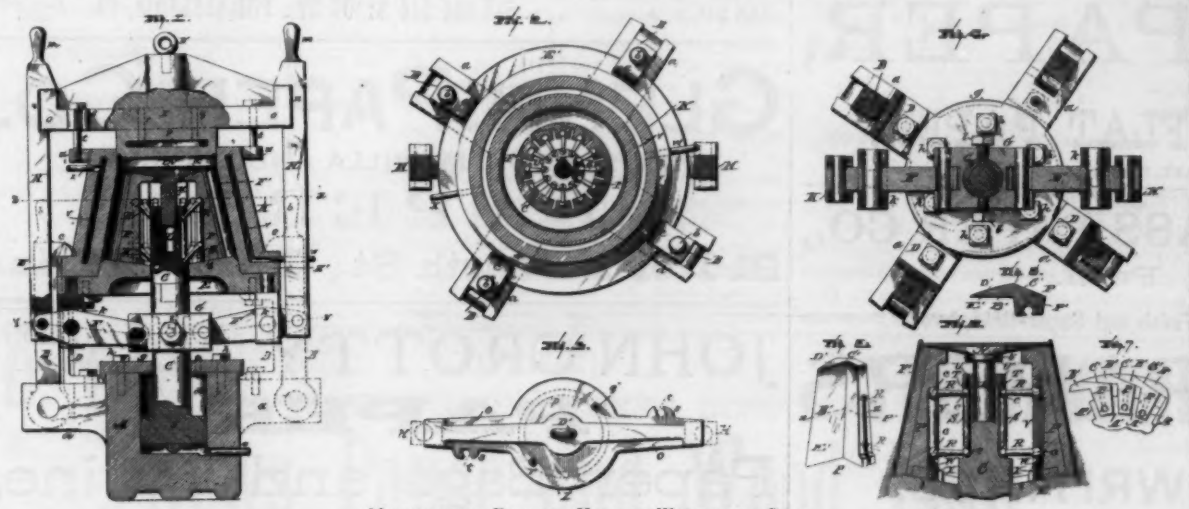
The hollow cylinder A, which forms the base or support of the machine, is cast with radial open slotted arms or other suitable extensions, as shown at *a*, and to it are suitably pivoted the lower ends of clamp bars, B, the upper extremities of which terminate in handles, *b*, and laterally extending jaws, *c*. The chamber *d* of the hollow cylinder A communicates with a suitable hydraulic apparatus through the pipe *e*, through which water is forced into the chamber under the head *f* of a ram or plunger, C. This plunger, if preferred, may be constructed of two sections, the lower section, with the head described being of cast iron and the upper section of steel, connected by a screw coupling. A cap plate, *g*, is secured by bolts, *h*, or other suitable means over the upper end of the cylinder A to close the upper section of the chamber.

To the radial arms *a* are bolted or otherwise suitably connected brackets D, and to the upper ends of these brackets is connected the base plate E, the brackets forming supports therefor, the plate having an inclined upper surface inclining in a direction downward toward the centre thereof, as shown at *i*.

Connected to the base plate E and depending therefrom are slotted hangers, *k*, and to these hangers are pivoted links, F, which in turn are pivoted at their inner ends to a suitable bracket, G, held to the plunger C by set screws, *l*. The outer ends of the links F have pivoted to them suitable clamping levers, H, terminating in handles, *m*, at their upper ends and recessed, as shown at *n*, to engage with the arms *o* of a chambered follower, I. The chamber *p* is for steam or other heating agent, and has supply and exhaust ports, as shown at *q r*, respectively, in Fig. 3, the supply port being connected by pipes or other suitable and well-known means to a steam or other heat generating medium, where the chamber *p* obtains its supply, as is common in this class of machines.

The arms *o* of the follower I have slotted ears, *s*, extending horizontally upon opposite side of the arms and with which engage headed bolts, *t*, provided with screw threads for connecting them to ears, *u*, upon the upper ends of the chambered outer mold K, which form the outer wall or sides of the pail or other vessel. The chamber *v* of the mold K extends entirely around the latter and receives its supply of steam or other heating medium or agent through a pipe, *w*, and exhausts through a pipe, *x*, in the usual manner. The plunger extends up centrally through the base plate and has an axial opening, L, to receive the stem M of a forming disk, N, which has its under side inclined in a direction toward the centre downwardly, and has annular shoulders, *b*, to form a stop for the upper ends of a plurality of sections, P, which constitute the inner mold or former.

The inclined surfaces of the base plate E, as shown at *i*, and the inclined under side *a'* of the disk N, in connection with the corresponding inclines upon the lower and upper ends of the sections P of the inner mold or former, are considered of material importance, in that a much closer joint can be obtained and consequently greater security against the material working in between the mold sections, and also enabling the toggles to more readily pull the sections



MACHINE FOR FORMING HOLLOW WARE FROM PULP.

back than were the surfaces perfectly flat or horizontal, thereby rendering the drawing back or moving outward of the mold sections much easier and consequently more effective in their purpose.

The stem M of the disk N also serves a twofold purpose in acting as a guide to retain the disk centrally and also when the toggles R, which connect the sections P to the plunger C, are horizontal or straight across, as shown in Fig. 5, and doing their heavy work, the lower end of the opening L will come in contact with the lower end of the stem M, and thus counteract the pressure exerted on the follower through the medium of pivoted links F and clamp levers H.

The toggles R are connected to the mold sections P and plunger C by a universal joint, thereby admitting or allowing of any slight movement of the sections in any direction without producing any strain on the toggles and securing a more perfect and easy movement of the section when being expanded and contracted. This universal joint is considered of great importance, as it produces a more successful operation of the expansible mold or former and in proportion enhances the value of the machine. The toggles R have balls, *c*, at their extremities, which fit in sockets in the plunger C and section P, respectively; but any well-known universal joint connection between the toggles, plunger and sections may be substituted.

In operating the machine the parts are in position as shown in Fig. 1, the head *f* of plunger C being down to the bottom of chamber *d* and the mold sections P contracted, as shown, which leaves a space between them and the interior of the outer mold K for the reception of the material from which the pail or other vessel is to be formed. The clamp levers H are now thrown out to disengage the upper ends with the arms *o* of the chambered follower I, these arms swinging around to disengage the slotted ears *s* with the headed bolts *t*. Now, by a hydraulic crane or other suitable hoisting apparatus connecting with the eye D' the follower I is lifted out of position in order to place the material in the space between the sections P and the inner side of the outer mold K, after which the follower is placed back in position and the headed bolts *t* engaged with the slotted ears *s* and the clamp lever H engaged with the arms *o*, as shown in Fig. 1.

The plunger C is forced up by hydraulic pressure or otherwise, which will force the sections P outward against the material and compress it, and at the same time, through the medium of the links F and the clamp levers H, will pull down the follower I to form the bottom of the pail or other vessel simultaneously with the sides or walls. Steam or other heating medium or agent is introduced into the chambers *p v* to heat the follower I and mold K, respectively, so that when the machine is used on the mixture of pulp and a binding substance the latter will be softened by the heat and the article so formed and compacted by the pressure under heat may be removed, and an article will be quickly completed in the condition of the ordinary indurated or vulcanized ware without further treatment. After this is accomplished the machine is reversed, the vessel is removed and placed over a cold form for a short period, and then is ready for painting or graining and bailing.

Cementing Leather to Iron, Etc.

[WRITTEN FOR THE JOURNAL.]

To cement a leather band on an iron pulley may seem an easy operation, and it is if you know how to do it and have the right cement. If not you will have an exceedingly painful illustration of the well worn adage that practice and theory don't agree, and the morals of those around will probably receive a serious shock. As a rule when leather is cemented upon iron it either will not stick "worth a cent" or the adhesion is such that you cannot separate the two without slicing the leather, and that is just what is wanted.

The first thing to do is to scrape a clean surface on the iron with a coarse file, leaving it so as to give a good "bite," and then paint over with caput mortuum or red lead paint, working it very dry and putting very little on so as to avoid peeling. A quantity of strong glue is then softened by soaking in warm water, melted in a pot at a gentle heat, and enough aquafortis is added to keep it from setting when cold. The aquafortis must be diluted or it will act too energetically on the glue and destroy it by oxidation. The right quantity of acid must be determined by experiment, as it varies with the different glues, and the glue should remain of the consistency of molasses when cold if the acidification is not excessive. Add common turps, about 30 per cent., and warm so as to thoroughly incorporate the two and apply hot. The leather should be previously softened with hot water and castor oil, and will be found to have strong affinity for glue treated as described, although pressure must be used until the metal and leather adhere.

Pure gutta dissolved to a thick cream in carbon bisulphide makes a first rate cement for attaching leather to leather, leather to rubber, rubber to almost anything, and, generally speaking, to resist the action of cold water, but not warm or hot fluid. Turps may be added also, but in many cases is not required. The gradual evaporation of the carbon bisulphide causes the gutta to get slowly thicker; hence the strong adhesive properties of this cement. Pressure should be increased very carefully as the cement thickens. If turps is employed the most pressure should be applied just before the cement sets. Before applying the cement it is sometimes useful to paint the portions of the leather which are to be joined with hot turps, and this should be done not long before the operation is completed. A cement used by manufacturers of rubber boots and shoes comes in very handy sometimes around a paper mill and is made as follows: Two solutions are required to be made separately and mixed before using. Solution "A" consists of 25 parts of pure rubber dissolved in 1 part of crude chloroform. Solution "B" consists of turpentine 10 parts, pure rubber 2½ parts and rosin 1 part. The best way to effect the combination is to melt the rosin at as low a temperature as possible first and drop in the rubber cut up into small pieces. When duly reduced and cooled off a little, the turpentine is stirred in. Solutions "A" and "B" are mixed in equal volumes before using. In making up holes a patch should always be used before putting the cement on thick.

Where great flexibility is required ordinary rubber cement will not do at all and must be replaced by one of a different composition. Four parts of bisulphide of carbon are used to dissolve one part of pure rubber, one-half part of pure gutta and as much isinglass as can be taken up. The surfaces to be cemented with this mixture must be very hot or the joint will not be a success. Another method is to dissolve as much pure rubber as will be taken by a given quantity of benzine, making it as thick or thin as required by adding either rubber or benzine. In all of these preparations the pure rubber must be used, as all attempts to make cements with "compo" or "substitutes" will prove abortive. Before dissolving the rubber must be finely shredded with a sharp knife. Still another useful cement of this class is made by softening pure gutta in boiling water and then cutting it into hot coal oil. This should be contained in a wide mouthed, stoppered vessel, corked up to keep the oil from evaporation and allowed to stand in the water bath for fifteen to twenty hours, or more if required. This requires melting in the water bath each time it is to be used.

So-called "Universal" cement is made by melting equal weights of common pitch and gutta percha in an iron vessel with continual stirring. This also must be melted before using. For patching or repairing articles made of "compo" or "substitute" the following prescribed mixtures are very popular: The first contains 10 parts of finely shredded rubber, 1½ parts of rosin and 1 part of shellac, the whole being dissolved in bisulphide of carbon. The second contains 15 grains of pure rubber and 4 drams of mastic dissolved in 2 ounces of crude chloroform.

It is sometimes necessary to attach rubber to metal, in which case a solution of shellac in 10 parts of strongest .880 liquor ammoniac will fill the bill to perfection. The shellac must be soaked in the ammonia for a long time, then treated in the water bath. After being kept for some weeks it can be used without the application of heat, but it should be remembered that it will soften rubber—hence gentle pressure must be maintained until the junction desired is perfect.

Two more gutta cements may be found useful. Dissolve by heat in the water bath 10 parts of gutta, 10 parts of asphalt and 1⅛ parts of oil of turpentine. The second is made by dissolving in the water bath gutta in ten times its weight of benzine and mixing the hot solution with 10 parts by weight of hot linseed oil varnish.

The famous marine glue is made by dissolving 1 part of pure rubber in 12 parts of crude coal oil and then adding 2 parts of asphalt. Heat must, of course, be used to effect the solution. So called marine glue is sometimes offered by mill supply men ready made in tins, but should never be bought, because to obtain the best effect the materials should be pure; that is to say, the rubber ought to be what is known as virgin rubber, and it always pays to make it yourself. It will stick in any damp location, and few cements will do that.

Hints to Mill Owners and Millwrights.

[WRITTEN FOR THE JOURNAL.]

BY JAMES F. HOBART.

Framing hewed timber is not a very pleasant operation and considerable skill on the part of the workman is required to make the joints come together when the work is put in place. When beginning to work hewed timber the first step is to snap a line the entire length of the stick. If 2 inch mortises are to be made with 2 inch shoulders, it is well to stretch the chalk line 2 inches from the edge of the stick, then use the line to set out mortises from.

After getting a line upon one side of the stick, the places where the mortises are to be located must be leveled off by a fore plane or large chisel, and considerable care must be taken to keep them out of wind. Face off for one mortise, then lay a 2 inch square upon the spot thus finished, hanging the square so that it balances upon the timber; then place another square at the other end of the stick and sight by both squares to see if they lie parallel. If they are parallel nothing further is necessary except smoothing off for the second mortise at the place where the second square is located.

If the two squares do not lie parallel they must be made so by working down one side or the other of the stick of timber, as may be necessary. All the other places where mortises are to be located must be treated in a similar manner. For very nice work it is usual to size down the entire length of the stick, but where few mortises are to go in it is only necessary to size the several places as above mentioned.

After spaces have been prepared upon one side of the stick of timber, the next side may be treated in a similar manner, except instead of snapping a line and setting out of wind, as was done for the first side of the timber, the mortise faces on the second side

(*Continued on page 1079.*)

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(Continued from first page.)

of the stick may be squared over from those already located upon the first side.

The skillful framer takes advantage of the large and small places in a stick of hewed timber and cuts his girts long or short, as the case may be, thereby saving much time by allowing the places for the mortises to be left large without more boxing into the stick. Considerable boxing might be necessary were the stick sized down to a given size. The work is just as strong when made in this manner, although care must be taken that confusion does not arise from the different lengths and sizes of timber used.

In sizing up hewn timber the same methods are often used which are employed in facing stone. In place of the steel square used in this example the mechanic frequently prepares himself with three or four strips of board or pieces of metal 18 inches long, 2 or 3 inches wide and three-fourths of an inch thick. These pieces are called "wind strips," from the fact that they are used for taking lumber or stone "out of wind."

For use in dressing stone, level cubes of metal are used in connection with the winding strips. These pieces of metal are usually 2 inches square and 2 inches thick. When used, a bit of the stone to be operated upon is hammered down until a surface is obtained large enough to contain one of the cubes. Another surface is then hammered upon the opposite side of the stone and its level made approximate to that of the first space hammered upon, and cubes being placed upon each "spot," one of the winding strips is laid on the top of the two cubes, and the other end of the stone is treated in a similar manner, so as to bring the winding strips into line with each other. The use of the cubes permits the winding strip to be placed over any roughness of surface which may intervene between the cubes.

In dressing hewn timber the cubes are rarely used, as, when facing across the end of a stick with a plane or chisel, the stick is sized from side to side as easily as a spot upon each edge could be leveled off. The cubes are, however, very handy for the millwright. He can use them for bearings upon which to place a level or straight edge when running long lines or leveling from point to point upon a rough surface.

A novel application of chemistry was recently made by a practical millwright who had been troubled by the wearing off of the teeth from the segment gears used upon the paper cutter in his care. The first tooth of a segment usually wore off until it became thin, then it would break and render that particular segment unfit for further use. This mechanic procured some yellow prussiate of potash, heated the end of the segment which he wished to treat to a cherry red, then sprinkled upon it some of the powdered prussiate of potash. This operation was repeated, viz., the metal again heated and covered with powdered potash. After four applications of the chemical one end of the segment was quenched in cold water. The tooth to be operated upon was polished with an emery stick and found to be excessively hard. It was allowed to become warm from the heat contained in the body of the segment, and when the tooth exhibited an orange color it was dipped into water for an instant and immediately withdrawn. The dipping process was repeated at intervals until the whole segment was cool.

Upon examining the segment after this operation was completed, it was found that the segment was soft except at the tooth which had been tempered. This was evidently case hardened by the application of the potash, and the outside surface was turned into steel to a depth of one-thirty-second of an inch. This coating of steel had been hardened and tempered and presented a wearing surface which lasted for a long time after the segment was thus treated.

It was found necessary to treat the dog in the same manner. The dog should have been made of steel, but it was either constructed of iron or of Bessemer steel of so low a quality that it would not harden. The wearing surface of the dog was treated with potash in the manner described above. The result was a pair of surfaces which worked together, when well lubricated, for several months without appreciable wear. All of the segments supplied to this cutter were treated in a like manner.

This millwright has signified his intention of case hardening all of the gudgeons put into paper rolls. He also intends to fix up the gudgeons of all felt rolls and aprons used around the rag and duster rooms.

Numerous judgments, aggregating over $350,000, obtained against John Q. Preble & Co., blank book manufacturers, formerly at 10 Thomas street, after their big failure in December, 1889, were satisfied of record on Wednesday, the Messrs. Preble having made a settlement with creditors.

Correspondence.

Holyoke Notes.

[FROM OUR REGULAR CORRESPONDENT.]

HOLYOKE, Mass., December 3, 1891.

Business in this section has undergone little if any change since last week. Most of the mills are busy on orders and the product is well covered. There has been something said lately about an accumulation of finished goods on the hands of manufacturers, but there is very little of it here. As a rule the product is moving very well in response to outside calls. The mills have had enough water this week to keep the wheels moving and the canals have been as full as usual. The movement of goods is not confined to any one grade, but is distributed among all. Prices are unchanged, with no immediate change expected. The stock market continues very quiet and the volume of trade is confined to present needs.

Since last week the final arrangements for the transfer of the Syms & Dudley Paper Mill to the Nonotuck Paper Company have been finished and the property is now controlled by the letter. It is understood that the price paid was between $200,000 and $300,000, but none of those interested have named the figures. About three-fourths of the stock was owned by W. E. Syms and G. E. Dudley and the remainder was held by H. L. Dickinson, of the George R. Dickinson Paper Company. William Whiting owned a part of the stock at one time, but his interest was bought by Messrs. Syms & Dudley some months ago. The latter have not decided where to locate, but it probably will not be in Holyoke. These gentlemen have their eyes on a number of sites in the West, so it is said.

A meeting of the new stockholders of the Coburn Trolley Track Manufacturing Company will be held on the 15th inst., when the present officers will resign and a new board of directors and necessary officials will be chosen, and the affairs of the old concern will be turned over to the new men. The business office will be removed from Worcester to this city and G. W. Collins will be the general business manager.

O. H. Greenleaf, president of the Holyoke Paper Company, is recovering from his late attack of apoplexy, and his physician believes that he will soon be able to attend to business again as usual. It is hoped that his life will be spared for many years to come.

The Smith & White Manufacturing Company has filed its certificate of incorporation, which shows that the capital stock is $20,000, and that Frank D. Smith is the president, Edward N. White treasurer and J. L. Wyckoff secretary, and these gentlemen constitute the board of directors. The business is being removed to the new quarters in the Judd Building on Race street.

The McCormack water wheel, which was ordered from Jolly Brothers for the Government mill at Dalton a short time ago, is finished and is one of the largest ever made by this firm.

E. A. Ellsworth has nearly finished the plans for the Royal Pulp and Paper Company's new mill to be built at East Angus, Canada. Mr. Ellsworth has just returned from a trip to Canada.

John Ash, a mason, employed by Lynch Brothers on the new Norman Paper Mill, died suddenly while at his work one day this week. The cause of his death was probably heart disease. His family consisted of a wife and six children.

Samuel Snell's patent drainer bottoms have received much attention lately. He has just had another order for several hundred from the Platner & Porter Paper Company, of Unionville, Conn.

Price, Lee & Co., of New Haven, publishers of the city directory, are making the annual canvass among the citizens for a new volume.

E. E. Allen, formerly employed in E. A. Ellsworth's office, has been visiting friends in the city this week. Mr. Allen now holds a responsible position with the Western New York and Pennsylvania Railroad Company.

Sidney S. Rogers, paymaster for the Crocker Manufacturing Company, and Gertrude F. Haskell were married yesterday. The wedding was very quiet, only seventy-five immediate friends and relatives being present. "Sid." has the best wishes of a host of friends.

George E. Dudley is disposing of some of his valuable horses. H.

Boston Notes.

[FROM OUR REGULAR CORRESPONDENT.]

EASTERN OFFICE PAPER TRADE JOURNAL,
67 Federal Street,
BOSTON, December 3, 1891.

The past week has brought to light nothing in the way of developments to vary the unsatisfactory conditions of business.

That business in local paper trade circles has been unsatisfactory for several weeks is generally admitted by large and small dealers, and instead of improvement trade at the present time seems to have become even more depressed.

This condition is of course only temporary, but it is something which most of the dealers had no reason to expect, judging from past experiences. So far this fall the paper business has not come up to dealers' expectations, nor is much improvement looked for this month.

Paper manufacturers are not complaining for the want of orders, although complaints on this score might be heard had mills been able to produce to their full capacity during the past two or three months.

Even at the present time low water is reported from several places, while the freeze of last week has not improved the water situation by any means.

The outlook for a plentiful water supply throughout New England this winter is not encouraging, judged from present conditions.

To report the state of the paper stock market calls for a repetition of what has been so often written during recent weeks. The market is very quiet, trade is very dull and importers are likewise. Importers become dull when their minds are undisturbed by business activity, and when the need of exertion is lacking they become quiet. (This note of explanation will illustrate the situation without the use of a diagram.)

Nothing new presents itself in the chemical market, trade being very quiet. The only feature of interest is bleaching powders, and this article, it is claimed, will be of more interest next year. Sixty per cent. of this country's consumption has, it is said, been placed under contract for 1892. December shipments are firm at 2⅛@2.15c. Caustic soda is a little weak, January shipments being quoted at 2.90@2.92½c. Soda ash is quoted at 1.55@1.60c., alkali at 1.40@1.45c., and soda crystals at 1.10@1.12½c.

Receipts of chemicals for the week to date include 1,496 casks of bleaching powders, 650 drums of caustic soda, 86 casks of alkali, 485 casks, 1,250 bags of soda ash, 840 barrels of soda crystals, and 668 bags of crude sulphur.

Imports of paper stock were 2,191 bales of rags, 189 bales, 328 coils of manillas, 2,185 bales of miscellaneous grades and 1,148 bags of sizing.

Trade visitors seen in town this week were Harry Bartow and Mr. Taylor, of New York; Charles Barton and C. F. Keith, of

THE GLEN MFG. CO., OFFICE: 244 WASHINGTON STREET, BOSTON, THE HAVERHILL PAPER CO.,
News Paper and Wood Pulp.

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J. L. & D. S. RIKER, 45 CEDAR STREET, NEW YORK, Importers and Manufacturers' Agents.
SOLE AGENTS FOR THE UNITED STATES AND CANADA
OF
THE UNITED ALKALI CO., Lim., of Great Britain, BLEACHING POWDER.
FOR THE SALE OF THEIR VARIOUS BRANDS OF

PERKINS, GOODWIN & CO.,
Nos. 66 and 68 DUANE STREET, NEW YORK,
Have on hand and to arrive all grades of Bleached and Unbleached
SULPHITE AND SODA PULPS. SEND FOR SAMPLES AND PRICES.

Worcester, Mass.; John E. Clark and G. L. Munn, of Holyoke, Mass.; Frank P. Carpenter, of Manchester, N. H.; B. M. Jackson, of Pawtucket, R. I.; Charles S. Mayo, of Lawrence, Mass.; R. G. Thornton, of Richmond, Va; Charles Dobilinski, of Lambertville, N. J.; Mr. Tate, Mr. Cook and B. Lawrence, of New York; Charles R. Milliken, of Portland, Me.; O. D. Hartwell, of Nashua, N. H.; T. A. Moll, of Adams, Mass.; J. K. Dexter and Frank Pierce, of Springfield, Mass.

James B. Forsyth is doing New York this week.

Winship, Daniels & Co., printers, No. 150 Pearl street, made an assignment last Saturday to W. B. Littlefield, vice-president of a Lynn bank. A meeting of creditors is called for Saturday at the firm's office, when a statement of liabilities and assets will be made.

On Wednesday, at noon, December 16, Charles Alva Brown will be married, the bride being Eliza B. Rogers, of Gloucester, Mass. The ceremony will take place in that city at the First Parish Church, so say the wedding cards.

Mr. Brown is the son of Charles D. Brown, of the Rice-Kendall Company, one of the most popular men in the paper trade.

The bridegroom is receiving many congratulations from his business friends on the prospective happy event.

Charles D. Brown, as everybody knows, is also interested in the development of that promising enterprise, the Rumford Falls Power Company. The object of the projectors of this extensive property is to build a town at Rumford Falls, which is situated on the Androscoggin River. The water power is said to be the finest in New England and the facilities for the economical production of paper the best in this country. Everything which can possibly be done to add to the natural advantages of the location is being done. If a fine water power, insured against drought, and an unlimited supply of pulp wood and good railroad facilities are inducements to the location of paper mills, then Rumford Falls ought to attract the attention of paper makers contemplating the erection of new mills.

A Boston paper asserts that Mr. Riker has cornered the bleaching powder market for 1892. It is hardly just to hold Mr. Riker responsible for the high price of bleaching powders. The Chemical Union, on the other side of the water, has fixed the price and will regulate the output, J. L. & D. S. Riker, of New York, securing the distribution of the product for this country. It cannot be said that this firm has "cornered" the bleaching powder market, although the conditions under which J. L. & D. S. Riker handle the product may prove profitable to that firm during the coming year.

Mention has been made from time to time concerning the success of the "Aerophor" paper dampener. This is a device which will stand every word of commendation that can be given to it, as is evidenced by the many strong indorsements given by the different paper makers having it in use. While this favorable testimony is highly encouraging to the manufacturers of the "Aerophor," they never make use of such letters for advertising purposes. "The 'Aerophor' paper dampener," says Mr. Comins, who is introducing it, "is offered to paper makers on its merits alone and on that basis only is it sold." Very few paper mill devices have been so readily taken into the mill, and its success has been due to the fact that it accomplishes a desired result in the best manner possible. Mr. Comins, knowing just what the "Aerophor" will do under varying conditions, is always anxious to learn just what a paper maker wants to accomplish by its use before he ships a dampener. It being essential to know for a certainty some few facts relative to the setting up of the dampener in order to build an "Aerophor" suited to individual needs and to save time and delay in correspondence, Mr. Comins took advantage of THE JOURNAL two weeks ago to present these matters to the paper manufacturers. A more conspicuous advertisement seldom reaches the paper maker than the page announcement of the "Aerophor" paper dampener in the issue of November 21, and from the finish of the sheet itself the value of the "Aerophor" on manilla paper was self evident. And it is being used on book and news also with the best results.

In that same issue some very interesting particulars concerning the "Grinnell" sprinkler were also presented. From the statements made it seems that the "Grinnell" sprinkler is used in every manufacturing district of the world. This is a broad claim, but the claim rests upon facts. Two million five hundred thousand is a big number, and yet over that many of the "Grinnell" automatic sprinklers have been installed, protecting a floor area of more than 6,000 acres. Such a record is the best possible proof of the superiority of the "Grinnell" sprinkler. DELESDERNIER.

Northern New York.

[FROM OUR REGULAR CORRESPONDENT.]

WATERTOWN, N. Y., December 4, 1891.

Northern New York is once more busy with its paper pulp and sulphite mills. Business is again rushing. The scarcity of water in the Black River and its splendid water power tributaries has been the cause of general complaint, and the tall—yes, very tall—way some of the manufacturers have talked lately ought to have brought rain out of a clear sky.

The principal topic of interest, however, for the past two weeks—in fact, ever since it happened—has been the explosion of the digester in the Remington sulphite mill. The peculiarity of the accident is to be commented on and is well worth some space in THE JOURNAL even at this late day. One of the sections of the digester, which it is now claimed was defective, burst. It demonstrated the superiority of deoxidized metal for such uses over iron. Had the boiler been made of the latter probably tens of thousands of dollars' worth of property would have been destroyed. There are three digesters in the mill made of deoxidized metal and located at intervals of 10 or 12 feet, near the front wall of the mill. Each digester is supported by four iron pillars or posts about 8 feet high, sufficiently strong to bear the weight, and resting upon solid rock foundation. Each boiler is 9 feet in diameter and 30 feet in height, and is calculated to withstand a pressure of 81 pounds to the inch. At the time of the accident it is said there was only 40 pounds pressure. The wreck was cleared up and the other digesters have been used just the same as if the accident had not occurred. The output of the mill was about 15 tons before the accident and the two digesters since have been running off from 10 to 12 tons daily.

The building of a small sized town by one industry is quite a record. Nestling about the big paper mill of C. R. Remington & Co. at Jim Woods Falls is a hamlet which bids fair to grow to more imposing proportions within a brief space of time. Already it is composed of about twenty houses occupied by families of workmen engaged at the mill. Calculations are made to erect about thirty additional houses at the falls within a year's time. Much of the land thereabouts has been plotted and will be sold in lots, the Remington Paper Company owning 100 acres.

C. R. Remington & Son have sold their large saw mill at Harrisville to Eli Pettis for $6,000. It was their intention to convert it into a pulp mill, but they abandoned the idea on account of the poor water power.

D. A. Scott has gone up the line of the C. & K. road in search of wood pulp for the Jefferson Paper Company, of Black River. In this connection it might do to speak a good word for Dr. Webb's road, "the Adirondack and St. Lawrence," which the president of the Wagner Palace Car Company is pushing through into the wilds of the Adirondacks. This will open up a vast tract of timber lands which can be cut and the spruce used for pulp purposes. Such a railroad will open a way for transporting the logs. Now they have to be logged down the streams, and when it is low water many a drive has been hung up all winter.

Specials from Carthage and other points up the Black River show that there is plenty of water. An immense drive of pulp wood came down through Carthage last week. It was over a mile and a half in length.

The Watertown *Times*, speaking about low water and the recent rains, says: "The paper mills had experienced a difficulty in turning out their average daily output for some time previous to last week. The water was exceptionally low. The rainfall gradually raised the water in the river, and Mr. Parsons, who has charge of the pump house near Huntingtonville, now states that during the last twenty-four hours the water raised a foot in the pond above Delano Falls. The present volume of water in the river guarantees sufficient power for running the paper mills and factories for some time to come."

The Union Pulp Company, of Carthage, has put in a boiler and constructed two large tanks for the purpose of soaking the wood which has become dry. C. H. Wing & Son have been doing the work.

Specials from Dexter to your correspondent show that the internal management of one of the large mills there has had a shaking up. My informant says: "In the recent annual meeting of the officers and stockholders of the Dexter Sulphite Pulp and Paper Company, held in New York, it is said that there were facts brought before the members of the company, in the annual statements made by the president, secretary and treasurer, whereby it was deemed for the best interest of the company to make some changes in the officers of the corporation. Consequently there were changes made in the board of directors, also in the board of trustees, and it is rumored that other changes will be made in the officers in the mills, such as superintendent, foremen and those in authority in the mechanical part of the works. This was somewhat of a surprise to Dexter people, although it has been said by those who claimed to know that it has been the purpose of the company to make these changes when the proper time came."

The Frontenac Paper Company is making some extensive improvements in its mills. A new pulp mill has been erected; the machinery is now being put in and it will soon be ready for operation. A new steam boiler is being placed in the mills for steam heating. The capacity of the new boiler is 50 horse power. It was found necessary to put in the additional boiler since the mills have been enlarged.

Barber & Co.'s new paper mill at Fulton, N. Y., is nearly completed; this month will see the finishing touches. It is now wholly inclosed and workmen are engaged in setting up the machine, a 72 inch straight Fourdrinier. This will increase the company's output from 4 to 5 tons per day.

A little sensation is announced in the equally little village of Hailsboro, near Gouverneur. Alex. McQuinn, an employee in the St. Lawrence Pulp Company's Mills, is sorrowing over the departure of his wife and child. Several weeks ago, Dame Rumor says, she skipped with a handsomer man, but returned. McQuinn taunted her, and made life so disagreeable for the woman that she decided to skip again, which she did, taking her child and going to parts unknown. McQuinn has found no trace of her. W. E. T.

Western New York.

[FROM OUR REGULAR CORRESPONDENT.]

LOCKPORT, N. Y., December 4.

The "everlasting howl" hereabouts with the paper and pulp men, as well as with other manufacturers, has been the low water. The recent rains have brightened prospects considerably, but there are still gloomy fears that the winter will be cold and dry.

"Well, there is one thing sure," said a well-known Niagara Falls paper manufacturer, "when we get this hydraulic tunnel finished there will be water power and plenty of water for pulp and paper mills all the year around; no stopping on account of low water or rily water; all of those excuses will be a phantom of the past, and when the order book shows a big batch to be filled there will be no swearing because the mill has to close down on account of low water."

The Whiteman Pulp Company, at Dansville, is in a peck of trouble. It is not low water which bothers it, but no railroad. The Erie Railroad has been operating the branch from Mount Morris to Dansville until it was recently sold and passed into other hands. The Erie Railroad withdrew its trains and left Dansville cut off from the outer world except by the old style of stage coaching or teaming to Mount Morris. The Whiteman Company did most of its shipping and received its supply of soft coal over the road. Now it will have to cart its material to or from the Lackawanna road, which is several miles away, up on the hill side.

Returning to the question of low water the Niagara Paper Mills are putting in a new 250 horse power Corliss engine with two large boilers so as to run the machinery whenever the water power gives out; also when the canal is closed in April and dur-

(*Continued on page 1083.*)

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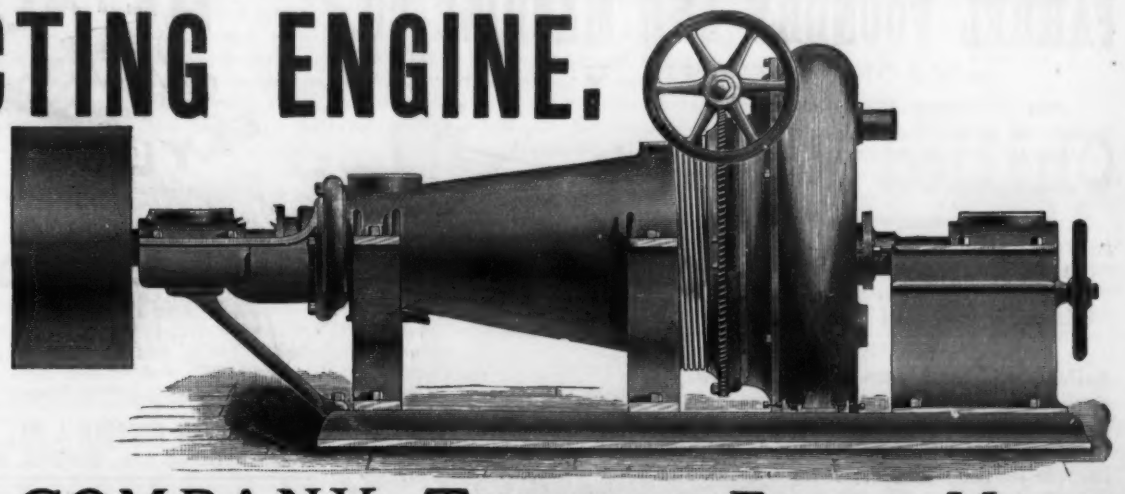

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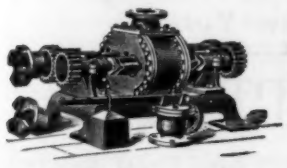

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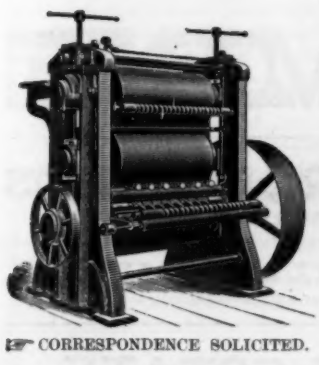

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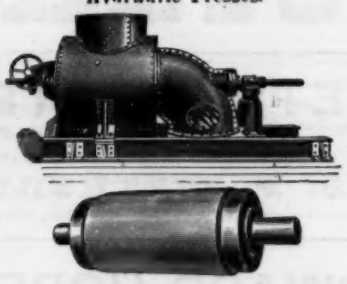

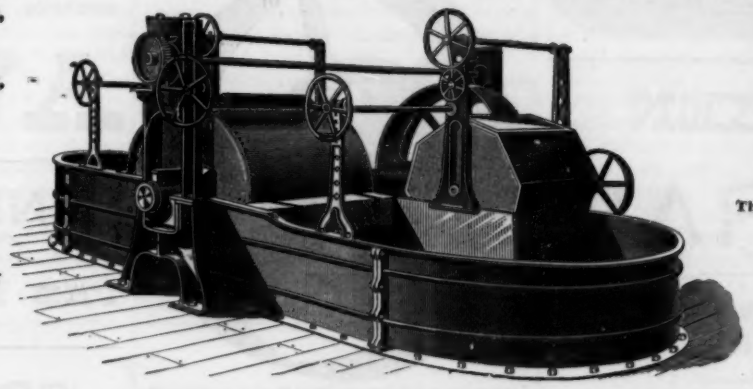

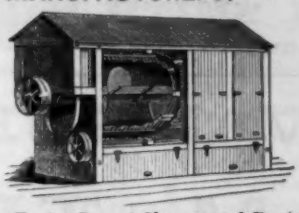

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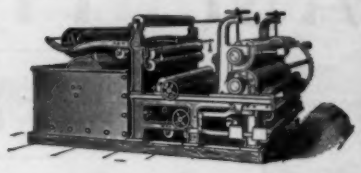

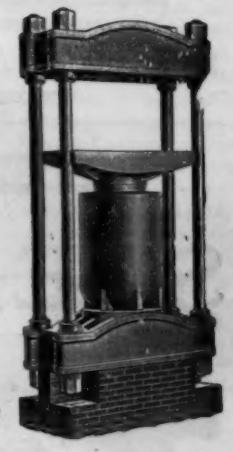

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PULP AND PAPER MACHINERY.

G. W. KNOWLTON, Pres. Office of THE ONTARIO PAPER CO., JOHN A. DECKER, Supt.

WATERTOWN, N. Y., August 12, 1890.

THE BAGLEY & SEWALL CO.:

GENTLEMEN—The following is the record of the 86 inch wire Fourdrinier Machine purchased of you for the past week:

August 4, . . 24,335 lbs.	August 6, . . 24,020 lbs.	August 8, . . 23,337 lbs.
August 5, . . 23,390 lbs.	August 7, . . 24,010 lbs.	August 9, . . 24,865 lbs.

Average per day, . . . 23,992 lbs.

These figures are the net shipping weight of the paper, averaging 31 lbs. to the ream, 24 × 36 in.

Yours respectfully, E. B. STERLING, Sec'y.

FRONTENAC PAPER CO.,

DEXTER, N. Y., August 20, 1890.

BAGLEY & SEWALL CO., WATERTOWN, N. Y.:

GENTLEMEN—At 8:30 to-night our machine tender shut down to put on a NEW FIRST FELT. The paper was off the reel less than ELEVEN MINUTES. It cannot be done on any other make of machine than the BAGLEY & SEWALL.

Hastily,

F. W. SPICER, Sec'y and Treas.

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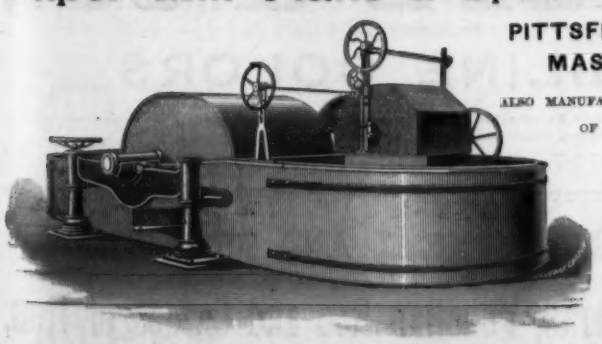

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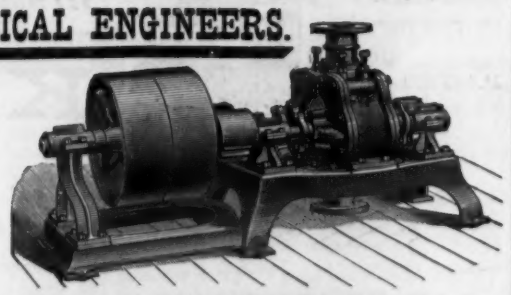

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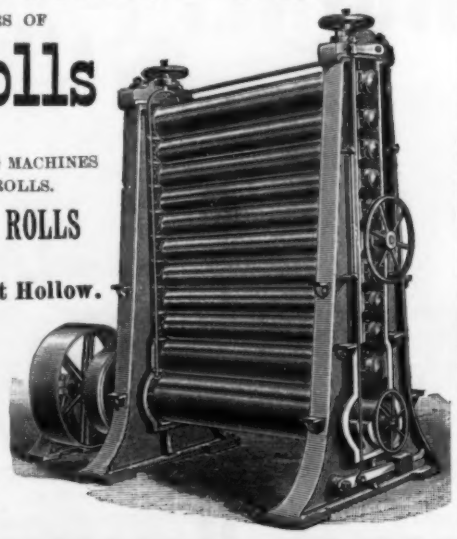

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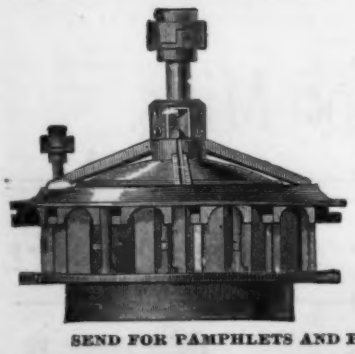

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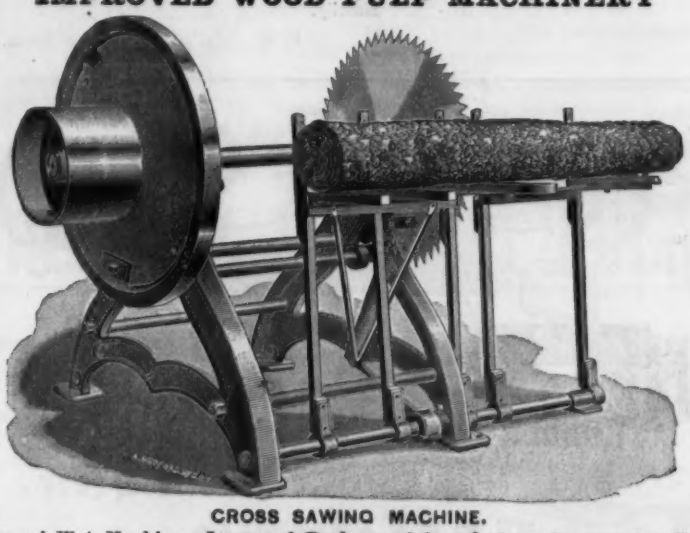

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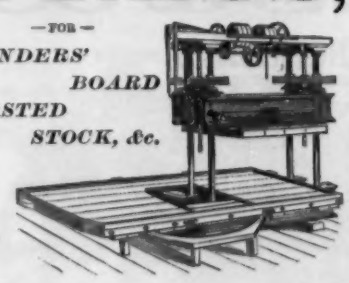

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(*Continued from page 1080.*)

ing the summer low water time. The cost of this improvement will be from $10,000 to $15,000. According to usual custom, the Niagara Paper Mills presented their employees with Thanksgiving turkeys. The company is 'way behind on its orders and is running day and night.

The Lockport Paper Mill is putting in six new cylinder dryers from Pusey & Jones. This will increase the drying capacity. The amount of steam used now can, by being more evenly dispensed over the additional dryers, be more effective and the results will be more advantageous. W. E. T.

Manufacture of Chromates and Bichromates.

Processes hitherto used for the manufacture of chromates and bichromates present several serious disadvantages which make them very expensive and which have not been remedied by the several methods which have been tried for that purpose.

The principal disadvantages are:

1. The enormous consumption of fuel for the oxidation in the ovens of the mineral mixture of lime and potash or salt of potash (or soda or soda salt). This consumption is so large that it forms about 25 to 35 per cent. of the cost of production of bichromate of potash.

2. The very hard labor required to stir by hand the material in the ovens during the process of oxidation.

3. The very incomplete oxidation of the minerals, so that only two-thirds or three-fourths of the sesquioxide of chrome is transformed into chromic acid.

4. The loss of a part of the alkali, potash or soda by evaporation, by being carrried off by the hot gases by combination with other substances, notably with the silicium, or by the formation of silicate of potash or of soda.

A process has been devised to diminish or do away with these disadvantages, as follows: 1. The consumption of fuel is reduced in a very considerable degree. The oxidation, instead of being effected during the admission of a large volume of very hot air, is performed slowly at the ordinary temperature. 2. The hand labor for stirring the matter in the ovens is done away with. 3. All the sesquioxide of chrome of the mineral is oxidized. 4. The losses of potash or soda heretofore alluded to are avoided. 5. The process has the advantage that it permits the use of less expensive salts of potash or of soda—as, for instance, the sulphates, instead of the potash or caustic soda heretofore used.

In carrying out the process the mineral, finely pulverized, is mixed with chloride of calcium and of lime, or with carbonate of lime, in such a proportion that the whole base coming from the caustic lime or the carbonate of lime shall be a little more than the quantity necessary for the formation of a chromate of lime. Then all the sesquioxide of chrome of the mineral will be transformed into chromic acid by oxidation.

The chloride of calcium is used in the proportion of 1 part to 3 parts of the lime (caustic lime or carbonate), which is a suitable mixture for the composition of the oxichloride of calcium. This mixture is obtained by kneading together the pulverized mineral and a paste formed either of lime and carbonate of lime or of carbonate of lime only, slaked or tempered in a concentrated solution of chloride of calcium.

If the mixture is made with carbonate of lime it will not harden immediately in the air; but if lime and carbonate of lime are used the kneaded mixture will get hard and can be formed in briquets or cakes which will partly dry in the open air. The mixture is then placed in an oven, where it is first moderately heated to accomplish the drying, and then it is exposed to the temperature required for the transformation of the carbonate of lime into caustic lime.

By using an oven with an ordinary floor or bottom the mixture will oxidate under the action of the warm air draft much quicker than in the processes heretofore employed, and consequently a saving of fuel is obtained; but if the material, when baked at the temperature required for the transformation of the carbonate of lime, be taken out of the furnace it will then be sufficient to expose the pieces to the air at the ordinary temperature in order to obtain gradually a complete oxidation of the sesquioxide without any further treatment, as the material is sufficiently porous to admit the air into the interior of the pieces.

The period necessary for the transformation of the sesquioxide of chrome into chromic acid combined with the lime will vary with the temperature, the dampness of the air and the thickness of the pieces. The mixture must contain an excess of lime, which excess must be greater in proportion as the process of oxidation is slower, so as to allow for the carbonization of a part of the lime of the mixture by the carbonic acid of the ajr. This process consequently obtains the chromic acid in the shape of chromate of lime, and the mixture will contain the following constituents when the oxidation is accomplished: Chromate of lime and chloride of calcium, carbonate of lime and caustic lime, sesquioxide of iron and gangue, a part of which is mixed with the lime.

The cakes, after being dried, may be advantageously baked in a continuous burning lime furnace heated with gas, and which may be either a tap furnace or a chamber furnace. The oxidation will commence under the action of the air current, which is introduced into the lime furnace for the purpose of cooling the cakes and effecting the combustion of the gas. The cakes should be then taken out of the furnace and exposed under sheds to the air until the completion of the oxidation. This work is regulated in the same manner as the work in a tile and brick manufactory. The mixed and molded matter is dried under sheds near the furnace, then baked in the furnace, and after leaving the furnace piled up under sheds or in air chambers until the completion of the oxidation. This oxidated mixture can then serve for the manufacture of chromates and bichromates, and also of chromic or chlorochromic acids.

In the manufacture of chromates and bichromates of potash and soda the mixture is washed in warm water, so as to obtain a concentrated solution containing all the chloride of calcium and only a small quantity of chromate of line, which result is attained through the great difference of solubility of these two materials (the chromate of lime being about one hundred times less soluble than the chloride of calcium).

In order to recover or utilize the chromate of lime in this solution the solution is concentrated and can then serve for the preparation of a new mixture. The solution can be used for the manufacture of chromate of lead (chrome yellow) by precipitating the chromate of lime by a lead salt. In this way a solution of chloride of calcium is obtained free of chromate and ready to be used again. At the same time the chrome yellow is obtained in a very economical way. When after this washing the mixture is treated by a solution of sulphate or carbonate of potash or soda, it will yield chromate of potash or soda, and if sulphuric acid is also used it will yield bichromate of potash or soda in solution. These solutions are filtered to relieve them of insoluble material and are then concentrated and crystallized for the purpose of extracting the salts which have been formed.

The mixture of dry oxidated matter treated by sulphuric acid or chlorohydric acid will obtain chlorochromic acid in an economical manner. After a washing relieving the mixture of the chloride of calcium and after drying a treatment with sulphuric acid will yield chromic acid without the use of bichromate of potash and soda. This process admits of a considerable reduction of the cost of manufacture of chromates and bichromates.

Process of Making Chlorine.

A new process for making chlorine is carried out by taking the mixture obtained by calcining at a dull red heat in a muffle furnace equivalent quantities of sulphate of magnesium, chloride of magnesium and chloride of manganese, all three being hydrated. The proportions used may vary within certain limits.

The calcined matter is formed by an intimate mixture of anhydrous sulphate of magnesium and of manganite of magnesium ($Mn_2Mg_2O_6$). This mixture disengages chlorine when treated with liquid hydrochloric acid. This mixture, which is coherent and porous, is placed in fragments in a cylinder of earthenware, inclosed in an iron casing, and is heated to a temperature a little below red heat. A current of hydrochloric acid gas is passed through and a rich current of chlorine is given off according to the equation:

$$3MgSO_4+Mn_2Mg_2O_6+16HCl=3MgSO_4+3MnCl_2+3MgCl_2+8H_2O+Cl_4.$$

The chlorine thus obtained necessarily contains a good deal of water and an excess of hydrochloric acid. In order to utilize it it has to be deprived of these two bodies, which is effected by well-known processes. After the action of the hydrochloric acid (which it is not necessary to carry quite to the end) there remains in the cylinders a mixture of anhydrous sulphate of magnesium, chloride of magnesium and chloride of manganese. If there is directed upon the mixture a current of dry air heated to a dull red heat, chlorine is disengaged and the mixture of sulphate of magnesium and manganite of magnesium is reconstituted.

$$3MgSO_4+3MnCl_2+3MgCl_2+O_6=3MgSO_4+Mn_2Mg_2O_6+Cl_{12}.$$

The gases passing from the apparatus contain from sixteen to twenty-seven volumes per cent. of chlorine, and can be employed in known ways for the production of chlorates and hypochlorites. After the action of the air the mixture of sulphate of magnesium and manganite of magnesium is again acted upon by gaseous hydrochloric acid, whereby the above mentioned action is produced. The mixture is then again acted upon with heated dry air, and so on, the operations being continuously repeated in the same apparatus at a dull or very dull red heat. There may also be passed through the cylinder a mixture of air and hydrochloric acid, such as passes from the sulphate furnaces. The mixture remains consistent and the reaction gives a continuous current of chlorine mixed with nitrogen, oxygen, steam, and an excess of hydrochloric acid. Before use it is deprived of these two bodies by well-known means.

The Steam Loop.

By Walter C. Kerr.*

(Continued.)

Quantity of Water Returned.—This depends upon the amount of moisture entrained in the steam, the condensation in the pipe and the boiler primage. Usually there is little attempt to classify water appearing in a steam system according to the causes of its existence. Its presence is simply regretted until harm results, and then it may be less considerately mentioned. If water is only to be drained out, as by drips, &c., when it accumulates in considerable volume, it matters little how it is formed, but when we come to handle it systematically, continuously, and with certainty we must consider the source of the product on which we operate. Water of entrainment causes steam to be known as wet, and is usually constant in quantity. It may be separated from the steam in several ways, means for this being provided in the various forms of separators, and when so separated must be led away from the main steam current so continuously that it cannot again be picked up. Water of condensation is supposed to flow along the bottom or be swept along the sides of pipes, and is also usually constant in quantity. It requires no true separation, but must be led into a chamber of suitable size in such a manner as to readily leave the column of steam with which it is flowing. As most pipes afford opportunity for water to collect at certain points, and then rush on with the steam, the receiving chamber should have ample capacity. Water of primage is erratic. Its presence is accidental. We cannot estimate its probable quantity, or the nature of its passage through the pipe. It may be so received by the pipe as to cause excessive entrainment, as is probably the case when an engine labors, clicks and shows very wet exhaust. It may come over as liquid and, mingling with the water of condensation, cause an engine to slow down, pound and collapse, or spurt streams of liquid water from the exhaust. It may be constant or intermittent, and is always dangerous. It must be led away from the steam currrent and received in a chamber whose capacity is considerably larger than that required for water of entrainment or condensation.

A separator must, therefore, provide ample facilities for separating the particles of entrained water from the steam and ample capacity for moderate primage. (Extreme primage is, of course, beyond control,

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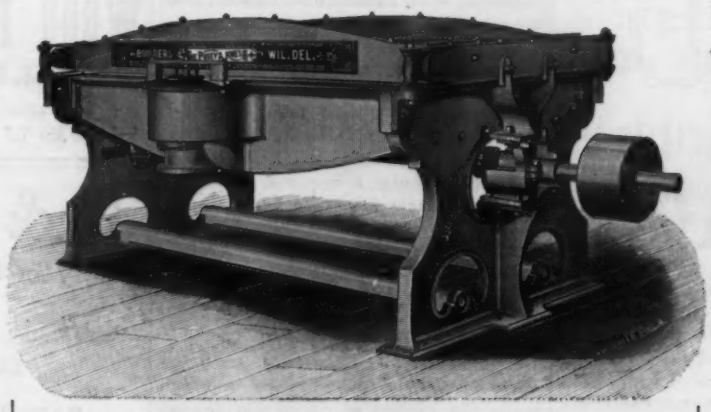

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EAGLE PAPER CO.,	Franklin, Ohio,	1
THREE RIVERS PAPER CO.,	Three Rivers, Mich.,	1
BARDEEN PAPER CO.,	Otsego, Mich.,	2
KALAMAZOO PAPER CO.,	Kalamazoo, Mich.,	1
ALPENA SULPHITE FIBRE CO.,	Alpena, Mich.,	4
DETROIT SULPHITE FIBRE CO.,	Detroit, Mich.,	2
JACKSON PAPER CO.,	Jackson, Mich.,	1
PENINSULAR PAPER CO.,	Ypsilanti,	1
J. R. BEARDSLEY,	Elkhart, Ind.,	1
DIAMOND MATCH CO.,	Wabash, Ind.,	6
KAUKAUNA PAPER CO.,	Kaukauna, Wis.,	1
KIMBERLY & CLARK CO.,	Neenah, Wis.,	1
S. P. TAYLOR & CO.,	San Francisco, Cal.,	1
W. H. CROSSMAN & BRO.,	Santos, Brazil,	1
St. LAWRENCE PAPER CO.,	Limerick, N. Y.,	1
TAGGARTS PAPER CO.,	Felt's Mills, N. Y.,	4
FORT ORANGE PAPER CO.,	Castleton, N. Y.,	1
S. A. RUDOLPH,	Manayunk, Pa.,	1
F. W. McDOWELL,	Manayunk, Pa.,	1
J. M. WILLCOX & CO.,	Philadelphia, Pa.,	1
C. S. GARRETT & SON,	Elkton, Md.,	1
BUENA VISTA PAPER MFG. CO.,	Buena Vista, Va.,	1
PIEDMONT PULP AND PAPER CO.,	Piedmont, W. Va.,	8
WILKINSON PAPER CO.,	Banning, Ga.,	4

and requires cure rather than care.) The loop must have capacity sufficient to continuously discharge the water collected from entrainment and condensation, and a maximum working effort, or single impulse, equal to taking in one liquid stream the contents of separator when filled up to a certain limit by sudden primage. (If filled beyond this limit we have a flood, whose control is not within the province of the loop or any other instrument, and must be left to Providence.)

This double service, for which the loop must be proportioned, involves the ratios existing between the volumes of the separator, riser and horizontal, for the horizontal must have a volume sufficient to take the contents of separator and drop leg, and still have space left to be occupied by steam, whose condensation will maintain a continuous action while the water in the horizontal is draining through the drop leg.

This action, while apparently intermittent, is not truly so. It is intermittent with reference to the extra charge of water carried, but the loop is simply exerting, in an emergency, its maximum ability, which, if constantly required, would not be inconsistent with its principle of continuity, although different proportions would then be desirable. Thus the quantity of water to be handled becomes a limiting condition only when it is so great as to literally flood the system.

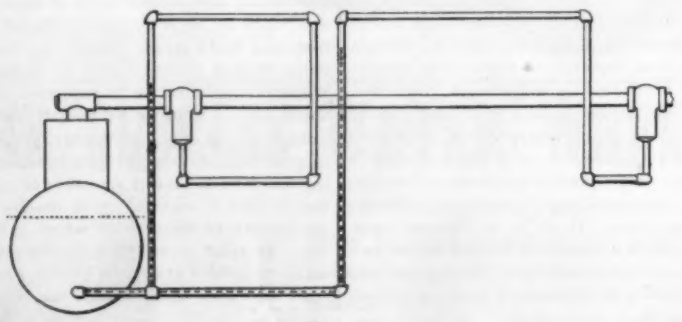

FIG. 7.

Devices for increasing capacity have been employed, such as cored risers, flattened risers, but experimentally they have not, as yet, produced such results as to warrant adoption.

When a loop is not sufficient to give the required capacity it is not enlarged, but duplicated, and this process may be continued to any extent. When two or more loops are applied to one source, no difficulties are met in their operation, except some competition as to which will secure the business of returning the water. A little influence exerted in the detail of pipe connections enables them to form a trust, in which the spoils are equally divided with satisfaction to all concerned, even the public.

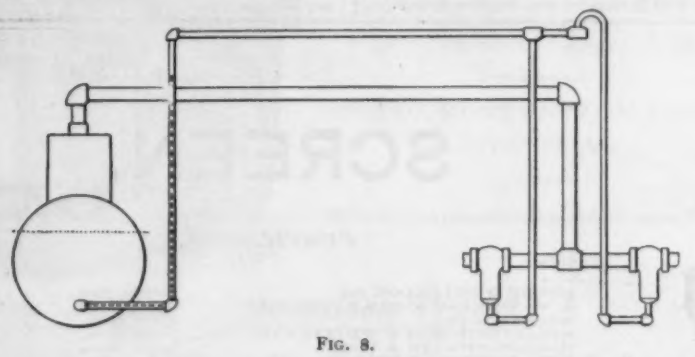

FIG. 8.

Another method, when primage is excessive, is to place a separator on the steam pipe near the boiler, with contents looped back directly, thus compelling the separator and loop at the end of the system to handle the water of condensation only. This method has been used with marked benefit (see Fig. 7).

Presence of Air.—To start the loop's action the air must be removed by blowing out with steam, hence it is proper to inquire whether air would not collect in the horizontal and gradually reduce the action and make it eventually become "air bound." There is certainly sufficient air in steam to produce this action, but in practice it does not. This may be attributed to the high velocity at which the loop current flows, carrying the air forcibly back to drop leg, where it enters the water and condensing steam, returning to the boiler. Only one instance is known where the loop has met difficulty of this nature, and that was due to boiler water containing much organic matter, the gases from which would collect in the loop. The remedy in such a special case is to apply a small stand pipe to the horizontal in which the air or gas can collect, cool, and, by difference of temperature, operate an air valve, allowing escape until steam rushes in and closes the valve.

To sum up the limitations, we find the loop action is practically independent of the distance that the source of supply is above or below boiler, and also independent of the length of return. It is not interrupted by the presence of the air, and is capable of handling such quantities of water as usually exist in steam systems. It is practically limited by excessive differences of pressure and by abnormal quantities of water.

Constructive Features.—When a device is so simple as to consist of a run of 1 inch or 1¼ inch pipe, it may seem unnecessary to endow it with so significant an attribute as constructive features, but there is a right and a wrong way even to run an inch pipe. When the mission is so special as that of the loop there is only one right way and numerous wrong ways. To enter into this matter in detail would be too long for the present discourse, hence we will consider only a few points of especial interest and without extended explanation.

Practice has determined that 1 inch or 1¼ inch pipe is most suitable for risers, while drop legs generally take 1¼ inch to 1½ inch, seldom 2 inches and never larger. Horizontals commonly are 2 inches, but, as the volume is material, they may be 4 inches or even 6 inches if very short; with reference to them, however, no rule can be considered generally applicable, for the volume of the separator may figure as a large or small element, according to the necessity for handling primage, while the ratio of superficial area to volume is important in giving proper strength to the circulation and determining the economy with which it shall operate.

All horizontals portions of the loop should pitch downward with the current. It may be well to remark here that the terms "riser," "horizontal" and "drop leg" do not necessarily imply that risers are always vertical, horizontals always horizontal, or that drop legs follow a plumb line. A riser is the entire run of pipe from separator to highest point of the loop, and may have horizontal portions. The horizontal is the summit level of pipe in which condensation produces the loop's action, and though usually horizontal is not necessarily so. The drop leg is frequently inclined and may have almost any form.

The riser should be provided with a stop valve and the drop leg with stop, check and blow-off valves. The check must have approximately equal areas on both sides, or when shut it will be much out of balance and become a serious obstacle to the returning water. The return must be made with an independent connection, for if connected to feed pipe the pulsation caused by pump would affect the drop leg, while if connected through blow-off, especially if it be in a mud drum, the loop may disturb the sediment.

The riser and drop leg should invariably be covered with good non-conductor to prevent loss of heat, while the horizontal should be covered wholly or in part, according to its length and size and the necessary condensation.

Combinations of Several Loops.—Thus far we have considered the loop as an isolated device, returning the water from one separator attached to one steam pipe. The application may, however, be extended throughout a large steam system; in fact, it is one of the important features that the entire drainage of a large system of steam pipes can be made with a system of loops forming a network of returns back to the boiler, affording ample opportunity to clear the system of water and with no chance for waste by escaping steam through faulty or open drips. It matters not whether the pipe be overhead or underground. Loops can be attached directly to the bottom of steam pipes at low spots, and separators may be used at each steam outlet where engines, pumps, dryers or other apparatus operate. When the system thus extends it is pertinent to examine to what extent the loops may be combined to simplify piping. On first thought it may be proposed to simply run all the drains to one point and there attach a loop of sufficient size, but the impropriety of this is at once apparent, since such loop would be liable to receive nothing but water and would be promptly flooded. Each loop is proportioned and erected with reference to specific difference of pressure and a given quantity of water; hence if the drainage of several separators into one loop is considered at all these separators must be attached to pipes bearing such relation to each other that they will all be subject to equal differences of pressure. Consider a large and small engine side by side, the large engine having constant load, while on the small one the load varies widely. If these separators be drained into one loop there would be opportunity for a sudden drop of pressure near small engine, caused by sudden increase of load bringing the contents of the large separator over to and possibly through the small engine. This could be obviated by introduction of check valves, but they are undesirable, and the loop system is so capable of being made to work properly on its own intrinsic principles that it would seem to be bad engineering to create a set of conditions in which the loop needed auxiliary devices to counteract effects which should not be present. Similarly, when large quantities of water are received by one drain or separator, its presence might so overload the loop as to render it inoperative with respect to the several other connected sources. Therefore one loop should never be connected to several sources of supply, except in rare cases where the different sources may be considered only as subdivisions of one source; that is, where they are all subject to the same influencing conditions. Each source of supply should therefore have its own riser. If, now, several risers from various sources enter one horizontal, we would afford opportunity for the loop's fundamental principles to be violated. The circulation must be uninterrupted and end at the point of lowest pressure. There cannot be more than one point of lowest pressure; hence with two or more risers connected into one horizontal, an accidental drop in pressure in any riser or pipe to which it is connected would short circuit the loop from one riser to another (see Fig. 8). Therefore each riser must have its own horizontal. We then consider whether several horizontals can enter one drop leg. The balancing water column whose height is due to difference of pressure must rise and fall with the variation of pressure. Hence one loop may have a different height of balancing water column from another, even though they enter the same boiler. At the origin of one loop pressure may be increasing, while at another it is decreasing, calling for corresponding fall and rise of drop leg columns, and if these loops were both attempting to utilize the same drop leg we should have the anomalous condition that a column of water is required to rise and fall at the same time, and hence two or more horizontals should not enter one drop leg. The numerous drop legs in a given system do not, however, require independent connection to the boiler, for they may discharge into one common manifold or header near to or distant from the boiler. The loop's action is performed when the water has been deposited in the drop leg; hence the method of connection beyond that point does not involve the action of the loop. Even if loops could be combined and connected in various ways consistently with safety and reliability, it would not be generally expedient or convenient so to do, for though several loops may be more complex, they are less complicated than several combined into one with numerous shut off valves, opportunities for leakage and interruption to service which may ensue when for any reason part of the loop system is shut down and the balance in operation. With individual loops the shutting down of part of steam plant simply cuts out single loops without effect upon the others.

(To be continued.)

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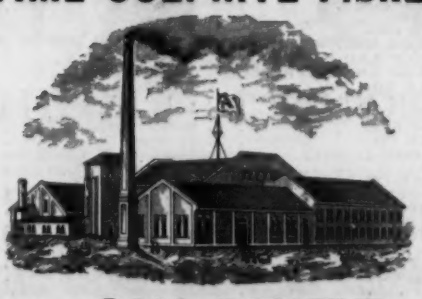
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Imports and Exports.

IMPORTS AT NEW YORK.

FOR THE WEEK ENDED NOVEMBER 27, 1891.

An. Colors..	356	$22,846	Paper.....	964	$26,917
Alum	—	—	Steel Pens..	5	6,084
Alum's Cake	—	—	Stationery ..	9	343
Bl. Powders	728	12,811	Slate Pencils	—	—
Soda Ash...	2,341	52,205	Clay	—	13,894
Soda, Caus..	973	14,890	Jute Butts ..	6,555	20,738
Soda, Sal....	100	840	P. Hangings	10	701
Soda, Hypo.	—	—	Paper Stock.	6,981	52,911
Ultramarine	—	—	Terra Alba..	200	409
Books	388	43,239	Waste.....	2	702
Newspapers	234	7,780	Wood Pulp..	893	5,404
Engravings.	126	12,569			
Ink	10	439	Totals....	20,889	296,603
Lead Pencils	7	881			

Imports General Merchandise for the week ended November 27, 1891..... $7,454,792

IMPORTS OF PAPER STOCK AT NEW YORK.

FROM JANUARY 1 TO DECEMBER 2, 1891.

Whence Imported.	*Rags.*	*Old Papers.*	*Chemical Fibre.*	*Ground Wood.*	*Manilla Stock.*
	Bales.	Bales.	Tons.	Tons.	Bales.
Alexandria....	2,441	—	—	—	5
Amsterdam....	—	—	124	—	—
Antwerp....a	1,263	158	1,163	39	7,008
Arendal.....	—	—	—	304	—
Aspinwall.. .	1,047	75	—	—	26
Barcelona.....	—	—	—	—	138
Blaye	768	—	—	—	—
Bordeaux.....	2,458	31	—	—	—
Bremen.....b	4,871	93	—	—	6,954
Bristol.....	—	21	—	—	4,887
Calcutta	—	—	—	—	44,990
Catania..... ..	908	17	—	—	—
Cent. America	1,780	—	—	—	—
Christiania...	—	—	1,622	—	35
Copenhagen...	1,780	—	2,452	—	1,666
Dublin.....	—	147	—	—	—
Dundee.....	176	340	79	—	11,330
Genoa.....c	1,496	127	—	—	5,893
Gefle.....	—	—	570	—	—
Ghent..... ..	290	—	—	—	—
Glasgow.....	1,054	733	—	—	1,135
Gothenburg...	—	—	1,231	1,185	215
Greytown.....	32	—	—	—	—
Hamburg.....	5,018	393	1,227	—	5,506
Hamilton.....	—	—	—	—	30
Havana.....	—	—	—	—	5
Hiogo..... ..	15,979	—	—	—	—
Hull.....d	13,998	464	3,482	—	18,187
Havre...	70	2	—	—	264
Leghorn.....	6,036	—	—	—	—
Leith.....	62	316	—	—	433
Liverpool....e	3,325	1,023	61	—	17,786
London.....f	7,676	4,696	395	—	6,070
Marseilles.....	2,592	—	—	—	127
Naples.....	14	—	—	—	—
Newcastle... ..	128	—	—	—	6,561
Palermo	—	—	—	—	478
Pillau.....	6,408	19	—	—	210
Rotterdam....	2,967	—	1,011	2	1,051
Stettin.....	14,268	—	2,577	160	4,873
Swansea.....	—	—	—	—	1,099
Yokohama...	6,270	—	—	—	—
Trieste...	290	—	—	—	—

a. Including 560 bs. flax waste.
b. Including 136 bs. flax waste.
c. Including 861 bs. cotton waste.
d. Including 633 bs. flax waste.
e. Including 108 bs. cotton waste.
f. Including 9 bs. flax waste.

IMPORTS of Rags and other Paper Stock at the Port of New York for the month ended November 30, 1891, from the following named Ports, showing Quantities from each Port.

Whence Imported.	*Rags.*	*Old Papers.*	*Chemical Fibre.*	*Ground Wood.*	*Manilla Stock.*
	Bales.	Bales.	Tons.	Tons.	Bales.
Antwerp.....	173	—	126	—	1,587
Barcelona.....	—	—	—	—	138
Bremen	1,311	—	—	—	2,821
Bristol.....	—	—	—	—	72
Bordeaux... ...	208	—	—	—	—
Calcutta.....	—	—	—	—	12,127
Central America....	280	—	—	—	—
Copenhagen..	156	—	208	—	659
Dundee.....	—	—	—	—	1,108
Genoa	—	—	—	—	626
Glasgow.....	111	—	—	—	—
Hamburg.....	1,172	—	97	—	1,385
Havre.....	—	—	—	—	156
Hull	1,410	—	445	—	3,911
Hiogo	1,863	—	—	—	—
Leghorn.....	779	—	—	—	—
Liverpool.....	255	10	—	—	3,490
London.....	637	667	33	—	287
Newcastle.....	—	—	—	—	1,053
Pellau.....	2,174	—	—	—	—
Rotterdam... ...	423	—	92	—	229
Stettin.....	1,454	—	532	—	2,947
Totals	12,404	677	1,533	—	32,521

Special List of Imports of Paper Stock at the Port of New York for the month ended November 30, 1891.

Importers.	*Rags.*	*Old Papers.*	*Chemical Fibre.*	*Ground Wood.*	*Manilla Stock.*
	Bales.	Bales.	Tons.	Tons.	Bales.
Arkell, James.	—	—	—	—	72
Atterbury Brothers..	643	—	—	—	—
Avis, W. A., & Co....	600	10	—	—	—
Berlin, T. K.....	—	—	—	—	2,894
Bertuch, F., & Co....	—	—	419	—	—
Burgass & Co.....	100	—	—	—	1,463
Cabot, Ray & Co.....	—	—	—	—	946
Castle, W. A.....	432	—	—	—	—
Darmstadt & Scott...	171	64	—	—	—
Downing, R. F. & Co.	—	—	—	—	123
Dutton, H., & Co. ..	—	—	—	—	2,125
Gottheil, Leon.....	168	—	72	—	503
Hamilton, G.....	—	—	126	—	—
Hampton, J. W. Jr., & Co....	—	—	—	—	188
Howard, J. A.....	145	482	—	—	—
Howe, Balch, & Co.	—	—	—	—	7,314
Harley Co., Charles..	280	—	—	—	—
Hatton, E., & Co....	296	—	188	—	2,009
Jessup, E. P.....	—	—	—	—	110
Jessup & Moore Paper Co.....	200	—	—	—	853
Kerns, A., & Co....	50	—	—	—	—
La Manna, Frank....	—	—	—	—	156
Lewy Brothers.....	4,081	—	—	—	134
Libmann, J., & Co...	211	—	—	—	—
Lyon, John H., & Co.	46	—	120	—	—
Lyon, J. W., & Co....	—	—	45	—	—
Mason, J. W., & Co..	—	—	—	—	1,063
Millar, G. W., & Co..	—	—	—	—	5
Morrison, H., Jr....	—	—	—	—	275
Oakes, F. L.....	—	—	—	—	130
Oelrichs & Co.....	—	—	—	—	45
Overton, R. H., & Son.	302	—	67	—	1,968
Perkins, Goodwin & Co.....	1,327	121	45	—	925
Pirnie, James..... ...	210	—	—	—	3,416
Ralli Brothers.....	—	—	—	—	657
Rau, G.....	641	—	154	—	—
Richards, C. B., & Co.....	235	—	17	—	317
Ring, T. F.....	—	—	—	—	44
Salomon, F., & Co...	306	—	55	—	2,501
Shulz & Ruckgaber..	200	—	—	—	—
Smith, Augustine, & Co.....	1,263	—	—	—	—
Smith, C. T.....	205	—	—	—	—
Stratford, Geo..... ..	—	—	—	—	103
Taylor, John L.....	—	—	—	—	433
Train, Smith & Co...	—	—	—	—	1,303
Wertheim, A., & Co..	173	—	170	—	144
West, George.....	—	—	—	—	216
Wing & Evans.....	—	—	—	—	186
Woolworth & Graham.....	82	—	—	—	—
Wright, F. H.....	—	—	110	—	—
Totals.....	12,404	677	1,533	—	32,521

NEW YORK IMPORTS.

FROM NOVEMBER 24 TO DECEMBER 2, 1891.

Paper Stock.

F. Salomon & Co., Conemaugh, Antwerp, 129 bs. rags.
R. H. Overton & Son, by same, 192 bs. bagging, 104 bs. manillas.
Burgass & Co., by same, 96 bs. bagging.
G. Hamilton, by same, 80 tons chemical fibre.
James Pirnie, Holstein, Barcelona, 138 bs. bagging.
James Arkell, Brooklyn City, Bristol, 72 bs. manillas.
Ralli Brothers, J. D. Everett, Calcutta, 657 bs. manillas.
F. L. Oakes, William Laurin, Calcutta, 130 bs. manillas.
Charles Harley Company, Neuces, Central America, 150 bs. rags.
J. L. Taylor, Aolona, Dundee, 218 bs. manillas.
Jessup & Moore Paper Company, by same, 238 bs. manillas.
G. Rau, Pomeranian, Glasgow, 54 bs. rags.
Train, Smith & Co., Fritz, Hamburg, 190 bs. bagging.
F. Salomon & Co., by same, 265 bs. bagging.
R. H. Overton & Son, by same, 80 bs. bagging.
Lewy Brothers, Nymphæa, Hamburg, 238 bs. rags.
F. Salomon & Co., by same, 55 tons chemical fibre.
Burgass & Co., Newminster, Hamburg, 78 bs. bagging.
A. Wertheim & Co., by same, 25 bs. rags.
G. Rau, Galileo, Hull, 25 bs. rags.
Perkins, Goodwin & Co., by same, 45 tons chemical fibre.
C. B. Richards & Co., Francisco, Hull, 235 bs. rags.
G. Rau, by same, 200 bs. rags.
R. H. Overton & Son, by same, 143 bs. rags.
James Pirnie, Greece, Liverpool, 120 bs. bagging.
R. H. Overton & Son, by same, 126 bs. bagging.
T. F. Ring, Highland Chief, Liverpool, 44 bs. manillas.
James Pirnie, by same, 311 bs. manillas.
Train, Smith & Co., by same, 194 bs. bagging.
George West, by same, 216 bs. bagging.
Darmstadt & Scott, by same, 11 bs. rags.
Train, Smith & Co., Michigan, London, 184 bs. bagging.
Lewy Brothers, Fiorella, Pillau, 313 bs. rags.
L. Gottheil, by same, 168 bs. rags.
Perkins, Goodwin & Co., Cleopatra, Rotterdam, 377 bs. rags.
G. Rau, Zaandam, Rotterdam, 20 tons chemical fibre.
Perkins, Goodwin & Co., Senator Iken, Stettin, 237 bs. bagging.
A. Wertheim & Co., Polaria, Stettin, 10 tons chemical fibre.
H. Morrison, Jr., Island, Stettin, 90 bs. manillas.
H. Dutton & Co , by same, 145 bs. manillas.
J. W. Mason & Co., by same, 44 bs. manillas.
Burgass & Co., by same, 206 bs. manillas.
F. Bertuch & Co., by same, 115 tons chemical fibre.
F. H. Wright, by same, 44 tons chemical fibre.
A. Wertheim & Co., by same, 50 tons chemical fibre.
J. W. Lyon & Co., by same, 10 tons chemical fibre.
A. Wertheim & Co., Norge, Stettin, 60 tons chemical fibre.

Paper.

Kennedy & Moore, Majestic, Liverpool, 2 cs.
Nevius & Haviland, by same, 4 cs. hangings.
Marcus Ward & Co., by same, 25 bs.
E. Tucker's Sons, by same, 6 bs.
Miller & Flinn, Maasdam, Rotterdam, 2 cs.
J. Metzgar & Co., by same, 1 cs.
L. De Jonge & Co., by same, Rotterdam, 13 cs.
S. Ascher, by same, 11 cs.
Roth & Lips, by same, 2 cs.
Merchants' Dispatch Company, Rhynland, Antwerp, 5 cs.
O. F. Melvin, by same, 4 cs.
Kupfer Brothers, by same, 7 cs.
Roth & Lips, by same, 13 cs.
James E. Ward & Co., by same, 1 cs.
L. De Jonge & Co., by same, 13 cs.
Louis C. Wagner, by same, 9 cs.
Henry Bainbridge & Co., by same, 6 cs.
G. Gennert, by same, 3 cs.
E. G. Soltmann, by same, 7 cs.
A. B. Herrie & Co., by same, 1 cs.
E. & H. T. Anthony & Co., Scandia, Hamburg, 11 cs.
E. Hawley, by same, 1 cs.
C. H. Wyman & Co., California, Hamburg, 1 cs.
J. Dickerson & Co., America, London, 21 bs.
E. & H. T. Anthony & Co., Aurania, London, 1 cs.
C. A. Haynes & Co., by same, 5 cs.
Thorne & Walter, by same, 2 cs.
United States Photo Company, La Champagne, Havre, 5 cs.
E. Fougera & Co., by same, 49 cs.
John Hunter, by same, 6 cs.
Gane Brothers & Co., Devonia, Glasgow, 10 cs.
Kupfer Brothers, Westerniand, Antwerp, 6 cs.
John Campbell & Co., by same, 12 cs
Louis C. Wagner & Co., by same, 16 cs.
G. W. Sheldon & Co., by same, 24 cs.
Wm. Metzgar & Co., by same, 1 cs.

BOSTON IMPORTS.

FROM NOVEMBER 25 TO DECEMBER 1, 1891, INCLUSIVE.

Paper, &c.

Wm. Guild & Co., Samaria, Liverpool, 6 bs. periodicals.
A. P. Schmidt & Co., by same, 8 cs. printed music.
H. B. Stevens & Co., by same, 2 cs. printed music.
Dennison Manufacturing Company, Philadelphia, Liverpool, 15 bs. tissue paper.

Paper Stock.

Train, Smith & Co., Borderer, London, 1,006 bs. rags.
True & McClelland, by same, 71 bs. waste paper.
S. D. Warren & Co., by same, 212 bs. rags.
Perkins, Goodwin & Co., by same, 79 bs. waste paper.
Crocker, Burbank & Co., by same, 157 bs. waste paper.
C. P. Sumner, by same, 58 bs. waste paper.
Wheelwright Paper Company, by same, 239 bs. waste paper.
T. F. Ring, by same, 154 bs. waste paper.
J. B. Moore & Co., by same, 5 bs. and 176 coils manillas.
Train, Smith & Co., De Ruyter, Antwerp, 189 bs. rags.
Train, Smith & Co., Palestine, Liverpool, 61 bs. manillas.
Train, Smith & Co., Nessmore, London, 171 bs. rags.
True & McClelland, by same, 31 bs. rags.
C. A. Cheney, by same, 33 bs. rags, 48 bs. manillas.
J. B. Moore & Co., by same, 142 bs. rags, 800 bs. waste paper.
Francis Sprague, Oranmore, London, 65 bs. rags.
J. B. Moore & Co., by same, 76 bs. rags.
Train, Smith & Co., Philadelphian, Liverpool, 200 bs. rags.
Train, Smith & Co., Milanese, London, 436 bs. rags.
Perkins, Goodwin & Co., by same, 101 bs. waste paper.
J. B. Moore & Co., by same, 75 bs. and 152 coils manillas.
C. A. Cheney, Roman, Liverpool, 113 bs. rags, 102 bs. waste paper.
True & McClelland, by same, 118 bs. waste paper.
Robert Bishop, by same, 25 bs. waste paper.
Springfield Waste Company, by same, 63 bs. waste paper.
C. A. Cheney, Michigan, Liverpool, 117 bs. rags.
True & McClelland, by same, 66 bs. waste paper.
Perkins, Goodwin & Co., by same, 20 bs. waste paper.
J. B. Moore & Co., by same, 102 bs. waste paper.

Bleaching Powder.

J. L. & D. S. Riker, Samaria, Liverpool, 463 cks.
Warren & Co., Michigan, Liverpool, 137 cks.
Warren & Co., Palestine, Liverpool, 172 cks.
Watson & Co., by same, 67 cks.
Warren & Co., Roman, Liverpool, 132 cks.
E. & F. King & Co., by same, 78 cks.
Mason, Chapin & Co., Philadelphian, London, 241 cks.
Linder & Meyer, by same, 170 cks.
A. K. Johnson, by same, 16 cks.

Caustic Soda.

Warren & Co., Roman, Liverpool, 150 drums.
E. & F. King & Co., Palestine, Liverpool, 200 drums.
Warren & Co., Michigan, Liverpool, 300 drums.

Soda Crystals.

Warren & Co., Roman, Liverpool, 280 bbls.
E. & F. King & Co., by same, 280 bbls.
Warren & Co., Michigan, Liverpool, 280 bbls.

Alkali.

J. L. & D. S. Riker, Samaria, Liverpool, 86 cks.

Soda Ash.

Warren & Co., Palestine, Liverpool, 89 cks.
Warren & Co., Michigan, Liverpool, 37 cks.
Warren & Co., Roman, Liverpool, 89 cks.
E. & F. King & Co., by same, 36 cks.
Linder & Meyer, Samaria, Liverpool, 850 bags.
Morey & Co., Philadelphia, Liverpool, 46 cks.
Mason, Chapin & Co., by same, 36 cks. and 400 bags.
Linder & Meyer, by same, 152 cks.

Sulphur.

Linder & Meyer, Philadelphia, Liverpool, 668 bags.

Sizing.

C. A. Cheney, Michigan, Liverpool, 293 bags.
C. A. Cheney, Nessmore, London, 437 bags.
C. A. Cheney, Roman, Liverpool, 294 bags.
W. A. Castle, by same, 124 bs. bags.

Felts.

S. G. Train, Philadelphia, Liverpool, 7 bs.

PHILADELPHIA IMPORTS.

FOR THE WEEK ENDED NOVEMBER 28, 1891.

Paper.

Drexel & Co., Mississippi, London, 25 bs. sheathing.

Paper Stock.

J. T. Bailey & Co., Mississippi, London, 32 bs. bagging.

EXPORTS of Paper, &c., from New York for the Week Ended December 1, 1891.

BOOKS, cases, to Amsterdam, 1; to Antwerp, 1; to Cuba, 2; to London, 12; to United States of Colombia, 1; to Liverpool, 11; to Venezuela, 2; to British Honduras, 1; to Brazil, 1; to Boulogne, 2; to Bremen, 1; to British West Indies, 7; to Christiania, 2; to Chili, 2; to Danish West Indies, 2; to Havre, 2; to Hamburg, 3; to Mexico, 1; to Nova Scotia, 1; to Rome, 4; to San Domingo, 2.

PAPER, to British Australasia, 35 pkgs.; to Central America, 4 cs.; to Cuba, 722 bdls.; to Liverpool, 4 cs., to London, 20 cs.; to British Honduras, 59 pkgs.; to Hayti, 55 pkgs.; to Mexico, 343 pkgs., 3 bs.; to Nova Scotia, 5 cs.; to Porto Rico, 204 pkgs.; to Venezuela, 10 pkgs.; to Brazil, 246 pkgs.; to British West Indies, 61 pkgs.; to British possessions in Africa, 3 cs.; to Copenhagen, 30 cs., 10 bdls.; to Ecuador, 1 pkg.; to Hull, 11 cs., 1 bdl.; to Hamburg, 3 cs.; to San Domingo, 87 pkgs.

STATIONERY, cases, to British Australasia, 13; to United States of Colombia, 3; to Cuba, 9; to Porto Rico, 7; to Central America, 41; to Liverpool, 2; to Mexico, 12; to Chili, 1; to Newfoundland, 3; to Nova Scotia, 2; to Venezuela, 11; to British Honduras, 1; to Brazil, 6; to British West Indies, 11; to British possessions in Africa, 1; to Copenhagen, 1; to Christiania, 4; to Ecuador, 16; to Hull, 1; to Hamburg, 6; to London, 37; to Peru, 1.

AGGREGATES AND VALUES.

Paper, reams.....	—	—
Paper, pkgs	1,834	$5,292
Paper, cases	80	1,218
Books, cases	59	3,864
Stationery, cases.....	190	11,321
Rosin, bbls...	2,005	9,717
Totals.....	5,068	$31,412

Exports General Merchandise for the week ending December 1, 1891..... ..... $8,014,967

TRAIN, SMITH & CO.,
IMPORTERS OF AND DEALERS IN
—ALL DESCRIPTIONS OF—
Paper Makers' Supplies,
24 FEDERAL STREET, BOSTON.
BRANCH OFFICES: 36 BEEKMAN STREET, NEW YORK. 21 ST. MARY AXE, E. C., LONDON. EDMUND ST. CHAMBERS, LIVERPOOL.

WM. J. CORBETT & CO.
Successors to BARLOW & CO.,
WHOLESALE DEALERS IN AND PACKERS OF
Woolen Rags and Paper Makers' Supplies,
237 and 239 SOUTH STREET, and 66 and 68 UTICA STREET,
THE OLD STAND, BOSTON, MASS.
WOOLEN RAGS GRADED IN COLORS AND QUALITY.

ESTABLISHED 1855.
DARMSTADT & SCOTT,
—IMPORTERS AND PACKERS OF—
PAPER STOCK.
Offices: 21 and 23 Centre Street; Packing House: 312 Water Street, New York.
☞ SPECIAL ATTENTION CALLED TO OUR OWN PACKING.

F. BREDT & CO.,
No. 194 Fulton Street, SOLE AGENTS FOR New York City, U. S. A.
JOSEPH PORRITT & SONS'
TRADE MARK ENGLISH FELTINGS.
ALSO IMPORTERS AND DEALERS IN
MARINE BLUE (Aniline) for Newspaper Mills,
Jacketing, Roll Cloth, Double Extra Canvas, Ultramarine Blue.

W. A. CASTLE,
SPRINGFIELD, MASS.,
IMPORTER OF
FINE GRADES LINEN AND COTTON RAGS.
All Grades of Sizing.
Waldhof Bleached Sulphite Pulp.

GRIFFIN & LITTLE, PAPER MILL CHEMISTS,
Office and Laboratory: 103 Milk Street, Boston.
EXPERTS IN THE SULPHITE PROCESS AND ALL CHEMICAL MATTERS PERTAINING TO THE MANUFACTURE OF PULP AND PAPER.

WALDHOF SULPHITE PULP
STRONG! PURE! FELTY!
OF ALWAYS EVEN QUALITY.
SOLD BY
LEON GOTTHEIL
SOLE AGENT FOR THE UNITED STATES,
No. 140 NASSAU STREET, NEW YORK.

WOOD PULP—CHEMICAL AND MECHANICAL,
IMPORTED BY
A. WERTHEIM & CO., "Times" Building, NEW YORK.

The Paper Trade Journal.

DEVOTED EXCLUSIVELY TO THE INTERESTS OF

The American Paper Trade.

Weekly, $4.00 per Annum.

Single Copies, - - - 10 Cents

HOWARD LOCKWOOD & CO.,
Publishers.

HOWARD LOCKWOOD. WILLIAM P. HAMILTON.

NEW YORK: SATURDAY, DECEMBER 5, 1891.

THE JOURNAL contains the latest and fullest information relative to the paper trade in all parts of the world, including descriptions of new appliances and processes for making paper, experiments with new fibres and other materials, a record of the water supply, with the latest manufacturing news in all parts of the country. It gives the cream of all the foreign technical journals which relate to the paper interest, besides communications from competent persons in the trade, both at home and abroad. The market review and quotations show the state of trade in all the principal cities, and no pains have been spared to make these accurate and complete.

Advertisements cannot be received for insertion in the current week later than 9 A. M. on Friday. The charge for advertising is 25 cents a line, each insertion. The rates for standing and displayed advertisements to be had on application. Card in Directory Column and one copy of paper, $15 a year.

Subscription per annum and postage for Great Britain..... £1

Subscription and postage for France, per annum..... 25 francs

Subscription and postage for Germany per annum..... 24 reichsmark

Foreign subscribers may address our New York office.

Payment for subscriptions or advertising may be made by express money order, draft, post office order or registered letter.

All communications must be addressed to

HOWARD LOCKWOOD & CO.,
Publishers,
126 and 128 Duane Street, N. Y.

Telephone No. 1994, Cortlandt.

CABLE ADDRESS: Catchow, New York.

BRANCH OFFICES.

Western Office—FREDERICK E. LYSTER, General Manager, 114 LA SALLE ST., CHICAGO, ILL.

Boston Office—A. L. DELESDERNIER, General Manager, 67 FEDERAL STREET, BOSTON, MASS.

LOCKWOOD PRESS PUBLICATIONS:

		PER YEAR.
Paper Trade Journal,	Every Saturday,	**$4.00**
American Stationer,	" Thursday,	**2.00**
American Bookmaker,	Monthly,	**2.00**
American Mail and Export Journal,	Monthly,	**3.00**
Lockwood's Directory of the Paper and Stationery Trades,	Annually,	**2.00**

All Pioneer Publications.

HOWARD LOCKWOOD & CO.,
126 & 128 DUANE ST., NEW YORK.

THE machine whose details are illustrated in this issue is designed for the manufacture of hollow ware from paper pulp, it being so devised as to be applicable to a dry or wet process. This is an interesting feature.

CONTINUED complaints of deficiency of water come to us from almost every side. Production is, of course, curtailed; but this may not be considered an unsatisfactory condition of business, except where orders are largely in arrears.

SOME people view the world through blue spectacles. We are almost inclined to class the New York *Times* and its managers within the category of those whose vision—to say nothing of views—is thus influenced. During the past week the *Times* has announced an advance in the price of its daily issue to 3 cents. We believe that the price was reduced to 2 cents in 1883. The *Times* states that the reason for this change is the increased cost of production, and also that it is a better paper than it has been heretofore. It would have been better had this change in price been made without such announcement and without flourish, for, being interested by the reasons assigned, we have referred to 1883, when the *Times* reduced its price, and find that news paper early in that year was held at 6½ cents per pound. From this price there was a decline and a large contract was closed in July at 5¼ cents. Comparing the figures of 1883 with prices ruling to-day, we assume that the *Times* is paying probably 2¼ cents per pound *less* for paper than in 1883. If the daily consumption of paper by the *Times* amounts to 4 tons (and we are not sure that it is not more), this means a saving of at least $200 per day on the cost of paper alone, 1891 as against 1883. Does printing ink cost more now than then? The ink makers will answer this promptly. Labor is no dearer, and if we were to hunt all around for increased expenses outside of taxes and building operations we might be at a loss to tell where the extras come in. It is true that new and handsome edifices, although outward and visible tokens of prosperity, may serve as coverings for overburdened hearts and light pockets; but in this instance we doubt it, believing that a very comfortable income is derived therefrom. The *Times* is sometimes funny. It was at one time remarkable for the facetiæ of its editorial columns. Perhaps it is resuming this feature.

MANUFACTURE OF BUILDING, ETC., PAPER.

Among the paper making products of this country which occupy no unimportant position as to the extent of output and gain in production are those generally known under the head of building, roofing and sheathing papers.

The annual capacity of the mills making these grades has increased largely—223 4-5 per cent. since 1881—amounting at the present time to 74,700 tons, although during the last year the product fell off more than 10 per cent. from that of the year preceding. The production of these papers is carried on in thirteen States, as shown by the subjoined statement of the

DAILY CAPACITY (IN POUNDS) OF MILLS IN THE UNITED STATES MAKING BUILDING, ROOFING AND SHEATHING PAPERS.

States.	1890.	1891.	Inc. or Dec.
Connecticut	7,000	9,000	*2,000
Illinois	33,000	33,000	....
Indiana	120,000	85,000	†35,000
Iowa	2,000	....	†2,000
Maryland	2,500	2,500	....
Massachusetts	66,000	63,500	†2,500
Michigan	26,500	26,500	....
Minnesota	27,000	27,000	....
Nebraska	12,000	12,000	....
New Jersey	17,000	20,000	*3,000
New York	40,000	39,000	†1,000
Ohio	27,500	31,500	*4,000
Pennsylvania	131,000	129,500	†2,000
Wisconsin	44,000	20,000	†24,000
Totals	555,500	498,000	†57,500

* Increase. † Decrease.

We do not know to what specially we are to attribute the falling off in this branch of paper making production last year.

PAPER STOCK IMPORTS.

The imports of rags and other paper making fibres—jute butts excepted—at the port of New York during the month ended November 30, as reported, amounted to 45,602 bales and 1,533 tons, the difference in quantities compared with the corresponding month of 1890 being an increase in rags of 1,706 bales, in old papers a decrease of 71 bales, and in manilla stocks an increase of 25,211 bales. There was no wood pulp imported during November, and of chemical fibre 522 tons more than the October imports were brought in. The appended tabulation shows the quantities of paper making materials of the kinds mentioned which were reported as having been imported during the month of November for five years:

	1891.	1890.	1889.	1888.	1887.
Rags.....bales.	12,404	10,698	11,987	3,994	6,585
Old Papers	677	748	1,587	1,833	3,243
Manilla Stocks	32,591	7,310	11,863	9,289	15,796
Wood Pulp*....tons.	....	....	....	815	24,063
Wood Fibre	1,533	2,991	2,981	2,498	....

* Quantities reported for 1887 refer to bales and include pulp and fibre.

The arrivals from the different ports were as follows: Antwerp, 173 bales rags, 126 tons chemical fibre, 1,587 bales manillas; Barcelona, 138 bales manillas; Bremen, 1,311 bales rags, 2,821 bales manillas; Bordeaux, 206 bales rags; Bristol, 72 bales manillas; Calcutta, 12,127 bales manillas; Central America, 280 bales rags; Copenhagen, 156 bales rags, 208 tons chemical fibre, 659 bales manillas; Dundee, 1,103 bales manillas; Genoa, 626 bales manillas; Glasgow, 111 bales rags; Hamburg, 1,172 bales rags, 97 tons chemical fibre, 1,385 bales manillas; Havre, 156 bales manillas; Hiogo, 1,863 bales rags; Hull, 1,410 bales rags, 445 tons chemical fibre, 3,911 bales manillas; Leghorn, 779 bales rags; Liverpool, 255 bales rags, 10 bales old papers, 3,420 bales manillas; London, 637 bales rags, 667 bales old papers, 33 tons chemical fibre, 287 bales manillas; Newcastle, 1,053 bales manillas; Pillau, 2,174 bales rags; Rotterdam, 423 bales rags, 92 tons chemical fibre, 229 bales manillas, and Stettin, 1,454 bales rags, 532 tons chemical fibre, 2,947 bales manillas.

Watermarks.

BY DANDY.

When Shakespeare wrote "The world is mine oyster," he probably did not think that a paper maker of the present day would want to use the phrase. It's a fact, however, and the awarding of that oyster in the shape of a large news contract has created considerable talk. It is said that the contract was virtually settled two months ago, when the owner of the *World* and two of the owners of the paper company which took the order met in Germany and had a conference anent the subject.

By the way, talking of that, who is "J. H. Jordan," who put in the samples on which the contract was awarded? Never heard of that fellow in the paper business. Wonder where his mill is?

If the holders of jute butts will examine the imports of manilla stock for the past month they may find in the figures a small explanation of why paper manufacturers are not standing in line and feverishly awaiting a chance to buy butts. The reason appears to be very substantial.

By the way, they tell me that a manufacturer who is doing some importing on his own account recently had about six hundred bales go on "General Order." That is expensive business and is scarcely as economical as buying your bagging here and letting the other fellow run the chance of catching "g. o."

The old saying that "it is never too late to learn" is illustrated in the case of a man fifty-two years of age, who is said not to have known what tobacco smoke was like until he had passed his forty-fifth year. Maybe the explanation is that his forty-five years were passed in Connecticut, and he smoked the native product.

Here is a tale from ye East. A tall youth of the Highlands who works in one of the large paper mill offices, invited his best girl to the recent Yale-Harvard football game at Springfield. He bought his tickets, paying $3 apiece for them, but found to his horror when he got home that he had lost them. He bought two more tickets, and now while he mourns the loss of his tickets his favorite song is "We won't go there any more."

Sometimes a man's fun loses its point rather suddenly, as it did in the case of Mark Twain, who is now in Europe. An Englishman asked him for a match. The humorist and LL. D. handed him one which "lights only on the box," and retired to await results. The Englishman tried the sole of his boot several times and finally resorted to his trousers. No results. Mr. Clemens happy. The Englishman walked to a window and drew the match sharply across a pane. A light! Mr. Clemens unhappy.

That isn't a bad point to remember. If the match strikes you are a light in. If the glass breaks you are a light out.

The daily papers tell of a rain making company which has been organized with a capital of $100,000. If that company can fill the bill successfully it will find ready customers among paper makers at certain seasons of the year.

A New York daily paper announced on the first of this month that it had increased its price 50 per cent. because of the increased cost of publishing it. The increase was certainly not in its white paper department, for the raw material is now at a figure which would have scared the wits out of an old-time paper maker, as it is only a fraction of what it was not a great many years ago.

The increased cost probably comes from the present rage for "big" papers, with matter padded out so as to make the ordinary daily contain as much as a monthly magazine, while a Sunday edition gives a man reading matter for a week.

Great excitement! Extras out and New York in a whirl. Some wild crank who determined to make a million or die for it has done the latter and included a number of other victims in his frenzied cast of a dynamite bomb. The story will be in all of the papers. It unfits me for further expression.

Trade Talks.

Major John J. Riker, of J. L. & D. S. Riker—The communication signed "Paper Manufacturer" which appeared in the last issue of THE PAPER TRADE JOURNAL is somewhat important in itself, and the question asked by its writer whether, in view of the fact that the English manufacturers can exact 2 cents a pound for all bleach delivered in the United States in 1892, they cannot put on the screws and make the manufacturers in the United States pay 3 or 4 cents a pound in 1893, perhaps calls for some remark. The correspondent also asks whether it is not among the possibilities for an association to be formed in the United States, either of paper manufacturers or outside capitalists, to manufacture bleaching powders. Well, as far as the possibility of such a project being started I have nothing to say. As to the probability, I don't think there's any likelihood of any bleach plant being put up in this country until an independent and much cheaper method of making bleach has been found out. All bleaching powder which is now manufactured, so far as I know, is a by-product of the Leblanc process. It is well known to those who understand the manufacture that so far bleach has not been successfully made in connection with the ammonia ash. It is a fact that for the last fifteen years the most distinguished chemists of Great Britain and the Continent have been trying every conceivable method of making it as an independent product, and it is, of course, within the range of possibility that some day they or others may succeed, although the probability of an early discovery has been much lessened by the length of time already consumed, with such meagre results. The price now being paid for bleach simply returns a fair manufacturers' profit, taking into consideration the present low and depressed value of the primary and other products. We don't think there will be any advance over the price at which contracts have been made for 1892; and let me say right here that if there is any consumer who fears that the price will be unduly advanced hereafter we will gladly sell him now his legitimate requirements for 1893 at the same price and on the same conditions as they exist for 1892.

Pulp Wood Supply Company.

[By Telegraph to The Journal.]

LOCKPORT, N. Y., December 4, 1891.

The Atlantic Pulp Wood Supply Company met at Merritton, Ont., this week, and elected the following named officers:

President, Ambrose P. Beverly, of Lockport; vice-president, Arthur C. Hastings, Niagara Falls; secretary and treasurer, Charles Riordon, Toronto; general agent, J. S. Holland, Toronto.

This is the company which has been formed to secure supplies of pulp wood for the different companies interested.

W. E. T.

Changes, Removals and New Firms.

W. Laton, stationer, &c., Ayrshire, Ia., has sold out.

Brewster Smith, stationer, Minneapolis, Minn., has sold out.

W. R. Borgnis & Co., printers, Dayton, Ohio, have sold out.

Ligon & Norvell, stationers, Beaumont, Tex., have dissolved partnership.

J. A. Lalame & Co., stationers, Montreal, Que., have dissolved partnership.

Edwards & Pettis, publishers, San Francisco, Cal., have dissolved partnership.

A newspaper called the *Enterprise* has been established at Melita, in Manitoba.

Reed & Baker, booksellers, &c., Rochester, Minn., have been succeeded by R. J. Baker.

The Victoria (B. C.) Lithograph Company has been incorporated, with a capital stock of $25,000.

Frank P. Woodward, publisher of the *Pioneer*, Dunmore, Pa., has been damaged by fire. Fully insured.

Annie M. Burke, bookseller, &c., Atlanta, Ga., has applied for a charter so as to incorporate under the style of the "Old Book Store" Company.

J. H. Van Sicklen, printer, and the Coma Paper Company, 57 Plymouth place, Chicago, Ill., have suffered losses from fire, respectively of $5,000 and $3,500.

P. A. Stoval, David Robinson, F. D. Murphy and others have incorporated the Savannah *Press* Publishing Company, to publish the Savannah *Press* at Savannah, Ga. The capital stock is $10,000.

On Wednesday, November 25, the *Evening Mail* of Orange, N. J., suspended publication. It was started three years ago by Samuel Tombes and Daniel P. Libby, but in 1889 was transferred to a stock company.

The firm of Belden & Dean, paper dealers, New York, has been dissolved, Charles A. Dean retiring. M. B. Belden will continue the business under his own name, and will have the agency of the Hollingsworth & Whitney mills as heretofore.

Crain & Sons is the style of a new firm in the book and stationery business at Albany, Ga. This firm is composed of members of the Key West News Company, of Key West, Fla., *i. e.*, Horatio Crain, Herbert H., Edward H. and St. Clair Crain. E. H. Crain is the manager of the Albany house.

R. H. Henry has sold his half interest in the *Clarion-Ledger* newspaper establishment at Jackson, Miss., to J. S. McNeilly of the Greenville *Times*. The paper in future will be published as the *Clarion*, with Mr. McNeilly as editor. The name *Ledger* reverts to Henry, and he will in a short time begin the publication of the *State Ledger* as a daily and weekly.

Failures.

Winship, Daniels & Co., printers, Boston, Mass., have made an assignment.

Isaac J. Bell, paper hanger, Norfolk, Va., assigned December 1. Liabilities, $13,000.

Stanislas Robitaille, wholesale dealer in stationery, wrapping papers and twines at Montreal, has made an assignment.

The Buena Vista Paper Manufacturing Company, Buena Vista, Va., which recently failed, is offering 25 cents on the dollar, payable in three months. A meeting of the creditors is to be held in New York about the middle of the month.

A Wall Street Failure.

The firm of Field, Wiechers, Lindley & Co., brokers in stocks and members of the Stock, Produce and Coffee Exchanges, No. 1 Broadway, New York, made an assignment November 27. The senior member of the firm was Edward M. Field, son of Cyrus W. Field, and the second member was John F. Wiechers, who before he joined this firm operated to a small extent in the paper stock line. The failure caused a good deal of excitement, especially after it developed that the failure was due to the alleged irregularities of the senior partner, who, it is said, not only wronged his partners but his aged father. On Monday orders of arrest were issued against the firm, and the assignee, Charles W. Gould, was enjoined from disposing of the assets. The senior partner is now in a private insane asylum. Cyrus W. Field's health had not been strong, but these troubles evidently overcame him and he has been confined to his bed ever since, and at one time he was reported to be dying. He rallied, however, and is now convalescent.

Cyrus W. Field was for a number of years connected with the paper trade. His first experience was as a clerk with Phelps & Field, paper manufacturers, Lee, Mass., the junior partner of which firm was his brother, Matthew B. Field. About 1839 or 1840 he became manager of the West Springfield Paper Company, but later came to New York and became the junior partner of E. Root & Co., who carried on a paper business in Liberty street. That firm failed and after it had settled with its creditors Cyrus W. Field went on alone for a time, doing business in Burling Slip. He then admitted Mr. Stone to partnership and the firm became Cyrus W. Field & Co., its place of business being in Cliff street. After the death of Mr. Stone two other partners were admitted, the firm style being continued the same. In 1857 the house failed, but, settling with his creditors, Mr. Field organized another firm under the old style; but in 1861 this house failed and settled at 10 cents on the dollar. Afterward Mr. Field paid his creditors both principal and interest in full. He, however, never again entered the paper trade.

Fires.

A. J. Knox, bookseller and stationer, Paragould, Ark., has been damaged by fire. Insured.

A fire occurred on November 26 in the premises on Tremont street, Boston, Mass., occupied by Ticknor & Co., publishers, and the Heliotype Printing Company. The former lose about $15,000; the latter about $30,000. Both are fully insured.

Personals.

J. H. McCormack, of the Manufacturing Investment Company, emphatically denies the rumor that he is to sever his connection with that company at the end of this year.

Wm. H. Sharpe, of Philadelphia, has been elected a director of the Jessup & Moore Paper Company.

Robert Carter, who has been connected with R. H. Overton & Son for several years, will enter the employ of Felix Salomon & Co. on the first of the year.

James K. Moffitt, son of James Moffitt, of the firm of Blake, Moffitt & Towne, San Francisco, Cal., has been appointed man-

ager of the Los Angeles branch house of the firm.

John H. Lyon and Phil. M. Knight, of John H. Lyon & Co., are respectively treasurer and secretary of the New York Vitrified Tile Company, of Brooklyn, N. Y.

John J. Harris, who has been assistant superintendent at the Augustine Paper Mill, Wilmington, Del., has taken the superintendency of the new mill at Mechanicville, N. Y. Before leaving Wilmington he was presented by the employees in the Augustine Mill with a gold watch and chain.

Mortgages, Etc.

[In the appended list R. signifies a renewal of a pre-existing mortgage; B. S., bill of sale; and Real, a mortgage on real estate.]

EASTERN STATES.

Mortgagor.	*Amount.*
C. H. Thurston, Cambridge, Mass.	$3,500
Thos. J. Hutchinson, Salem, Mass.	800

WESTERN STATES.

C. Ovington, Clinton, Ia. (Real)	400
J. D. Haworth, Richland, Ia.	450
B. L. Garretson, Winterset, Ia.	721
A. G. Mullen, Yersville, Ia.	500
A. G. Mullen, Yersville, Ia. (Real)	1,000
E. J. Bookwalter, Halstead, Kan. (B. S.)	800
E. C. Glenn, Leavenworth, Kan.	1,000
Chas. U. Dobson, Detroit, Mich.	1,000
Franklin Peale, North Platte, Neb. (Real)	1,027
Mary A. Peale, North Platte, Neb.	1,027
Schorr Brothers, Spokane, Wash. (Real)	2,000
H. W. Erick (et ux.), Janesville, Wis.	750
Geo. A. Rogers, Milwaukee, Wis.	157

SOUTHERN STATES.

Chas. Vittur, Atlanta, Ga.	2,000

CANADA.

Citizens' Printing and Publishing Company, Ottawa, Ont	8,000
Mortimer & Co., Ottawa, Ont.	4,000

Accidents.

Joseph Morse, employed at the mill of the Bowdoin Paper Manufacturing Company, Brunswick, Me., met with an accident last week, having three fingers badly injured in the calenders.

James Martin, an employee in the wood room of the Fall Mountain Pulp Mills, at Bellows Falls, Vt., was hit in the face lately by a flying knot and the sight of one of his eyes was destroyed.

On November 26 Bert Harrigan, son of William Harrigan, foreman of the York Haven Paper Mills, York Haven, Pa., was shot and killed by a boy named John Seifert. The accident occurred while a shooting match was going on along the banks of the river, about half a mile above the paper mill, near the head of the mill race. It is said that while Seifert was taking aim at the mark, and just as he pulled the trigger of the gun, young Harrigan ran in front of the gun and received the whole charge in the back part of his head. He was a bright lad and a favorite with all who knew him. He was thirteen years of age.

Obituary.

JOSEPH BAKER COWPERTHWAIT.

Joseph Baker Cowperthwait, member of the well-known educational book publishing firm of Cowperthwait & Co., Philadelphia, died on November 22, at his home in Chestnut Hill. He was born in Philadelphia fifty-eight years ago, his father, Hulmes C. Cowperthwait, being one of the oldest publishers of that line of books in the city. Joseph was educated in the public schools and at Yale College. Upon the death of his father, eight years ago, he succeeded him in the publishing business. Some time ago the house consolidated with the firm of E. H. Butler, and took its present name. He was married twenty years ago to a Miss Butler, of Boston, who survives him, as do also one son and two daughters.

JOHN CHURCH.

On Friday, November 20, John Church, one of the oldest residents of South Hadley Falls, Mass., died in that village. He had attained the age of eighty-seven years. Mr. Church was born at Granby on January 3, 1804. He was foreman of the paper mill of Howard & Lothrop for a long time. That mill was in operation before the first dam was built at South Hadley and when power was derived from wing dams in the Connecticut River. Mr. Church went from this place to Moody Corners, where he was foreman of the Goodman Paper Company. Then he spent nine years on his father's farm at Granby. For twenty-six years he lived in one house and there his wife died last August, when he returned to South Hadley to live with his adopted son. He leaves three brothers—Rufus, of Granby, eighty-five years; Allen, of Michigan, eighty-three, and Augustin, of Granby, seventy-nine. The funeral was largely attended from the residence of Charles Church on the following Monday afternoon. There were a large number of friends and neighbors present from Granby.

Joseph Hillabrandt, proprietor of the Cayadutta Mill, Sammonsville, N. Y., died on November 12, in the eighty-first year of his age. He was engaged in the manufacture of strawboard.

General Notes.

F. K. Buffum, publisher of the *Chronicle*, Cambridgeport, Mass., has been sold out by mortgagee.

Printing paper was imported into New Zealand in 1880 to the extent of 21,969 cwt. In 1890 the importation was 58,324 cwt. In 1880 the declared value averaged over 59s. per cwt.; in 1890 it was only about 23s. 6d.

During the next week the Crocker Manufacturing Company, Holyoke, Mass., will run on "blue granite," "salmon," "fawn" and "dark tea" papers, and buyers wanting these colors, especially in odd sizes, shoul advise the company at once.

The success of the efforts to utilize the water power in Switzerland has turned attention to the great waterfalls of Sweden, and several projects have been discussed for supplying some of the large towns with electricity.

Last week the Brownville Box and Paper Company, paper manufacturer, Brownville, N. Y., went to protest and on Wednesday judgments were entered at Watertown against the company for $21,552.80. The Jefferson County National Bank is the heaviest creditor, its claims aggregating $15,000.

A newly designed pulley upon which particular attention has been paid to danger from shipping belts has been placed on the market. On the face of the pulley at regular intervals are rubber strips with rounded surface and fastened by projections passing through the rim of the pulley. Not only do these strips do away with slipping belts, but lessen the wear on the latter and reduce the friction to the minimum. When worn out they can be replaced at a slight outlay.

At Windsor Locks, Conn., on Monday last, November 30, before a local magistrate, Frank H. Whittelsey, manufacturer of manilla paper, was sued by Charles Johnson, who had been one of his workmen. It seems that not long ago Johnson started a fire under the mill boilers when there was no water in them. The next morning he was discharged by Mr. Whittelsey and his wages were withheld to compensate for injury caused by his negligence. He then sued his late employer, claiming $100 as damages.

Paper is now being used to some extent as an insulator, and for which purpose it works admirably. Paper for this use is made in rolls and cut into strips by circular shears. These strips are mounted in mandrels which fit the covering machines and which revolve, laying the paper on in overlapping spirals. As fast as the spirals are laid the cable or wire, as the case may be, passes through close fitting dies and comes out covered with a hard and compact covering or insulation, which is afterward treated with a compound and coated with lead. Paper for this use is made by an especial process, and has to be properly seasoned in order to obtain the proper results.

On Wednesday the estate of Nic. Lennig, of Philadelphia, entered up judgments against the Fonda Lake and Port Leyden Paper Company, paper manufacturer, Port Leyden, N. Y., for $62,540.85. At the office of the concern it was stated yesterday that Mr. Lennig, the president of the company, had died while a series of improvements were being made, and that he directed in his will that all the enterprises in which he was interested should be continued. His death caused the company some financial difficulty, but it had made application to the Probate Court in Philadelphia for money from Mr. Lennig's estate, and hearing was now being had on the matter. Judgment was taken by the estate to protect not only itself but the other creditors, as other suits on protested notes have been begun.

George W. Hayward has been appointed receiver of Gies & Co., lithographers, Buffalo, N. Y., and judgment has been entered against the company by the Peter Adams Company, paper manufacturer, for $18,474, on a demand note made in 1887. The liabilities of the firm are stated at $275,000 and the nominal assets at $475,000.

In the interference proceedings relating to two inventions for making paper stock, which have been before the United States Patent Office for two years past, between John D. Tompkins, of Nassau, N. Y., and of the Tompkins Paper Stock Company, and Alexander Selkirk, of Albany, N. Y., and of the Standard Chemical Fibre Company, decision has been rendered in favor of Mr. Selkirk, whom the Patent Office finds to be the true inventor in both cases. One of the inventions relates to a process for making paper stock from various woods, straws and grasses and the other is for an apparatus by which fibrous vegetable substances are converted into paper stock.

Market Review.

OFFICE OF THE PAPER TRADE JOURNAL,
FRIDAY, December 4, 1891.

THE MONEY MARKET.—The stock market shows more business, and the great majority of the active shares closed at fractional higher figures. The loan market was steady and inactive, call loans on stock collateral ruling at 3@4 per cent. and closing at 1½@2 per cent. Time loaning rates on choice dividend collateral were 4@4½ per cent. for all terms. On active mixed stocks nothing is being done below 4½ per cent. Commercial paper is in excellent demand, a number of banks being purchasers now who have held out of the market for some time past. Rates are heavy and are reported as follows:

	Sixty days.	Four months.
Double named—		
First class	4½@5¼	4½@5½
Good	5½@6¼	5½@6½
Single named—		
First class	5 @ 6	5 @ 6
Good	6 @ 7	6 @ 7
Not so well known	7 @ 10	7 @ 10

The market for sterling was a shade easier, owing to a slight falling off in the demand from arbitrageurs and better offerings of commercial bills. Posted rates close at $4.82 for sixty days' and $4.85 for demand. Rates for actual business were as follows: Sixty days' sight, $4.81¼@4.81½; demand, $4.84@4.84¼; cables, $4.84⅛@4.84¾; commercial, $4.79¾. Continental bills quoted as follows: Francs, 5.23¾ and 5.21¼; reichsmarks, 94½ and 95½; guilders, 40¼ and 40⅛. Government bonds were steady but quiet.

THE PAPER TRADE.—Some manufacturers who have been regarded weak for some time are now reported as in financial trouble, but there is nothing in any of the cases which affects this market to any extent. As a rule manufacturers are busy, but city trade is reported as irregular and quiet. Low water is not troubling mill men as much as it was, and while streams are not yet normal, they are fuller than they were. The call for manilla papers is good, and city trade is feeling the preparations which retailers in other lines are making for holiday trade. Makers in this line believe they should get more money for their goods, but no higher prices are reported. Writing Mills are having a very steady trade of good volume, and prime grades of Book are in steady call. News is in large movement, and those engaged in this line have been quite actively discussing the changes made in the placing of a large contract, as reported last week. Straw Wrappings meet with good sale, and prices are very regular.

JUTE BUTTS.—The market is quiet, both on spot and at Calcutta. On spot 500 bags are being offered at 1 5-16c., but other holders want 1⅜@1 7-16c. The Calcutta market has again moved up and 1⅝c. is now the price. The statistical position, as given in the December circular of Cabot, Ray & Co., is as follows: Imported to the United States, 1888, 457,884 bs.; 1889, 412,689 bs.; 1890, 481,071 bs. Consumed in the United States, 1888, 389,684 bs.; 1889, 417,889 bs.; 1890, 496,994 bs. Stock on hand, New York and Boston, January 1, 1891, 50,250 bs. Imported New York and Boston, since January 1, 1891, 557,848 bs.; 1890, 458,600 bs.; 1889, 410,789 bs. Stock, New York and Boston, December 1, 1891, including 10,000 bs. paper stock, 54,931 bs.; 1890, 58,499 bs.; 1889, 85,500 bs. On passage for United States, November 23, 1891, and by cable to November 30, 1891, 70,458 bs.; 1890, 228,336 bs.; 1889, 68,575 bs. Visible supply to April 1, 125,489 bs.; 1890, 286,835 bs.; 1889, 154,075 bs. Consumption since January 1, 1891, 553,167 bs.; 1890, 465,674 bs.; 1889, 395,989 bs. Delivered to consumers past thirty days, 22,284 bs.; 1890, 25,173 bs.; 1889, 2,313 bs. The same circular says: "Market remains inactive and sales have been light for the month, closing strong in Calcutta but rather weak on spot here. Shipments for month, 32,000 bales, about half paper and half spinning. Spot Stock, 29,741 bs. paper; 15,190 bs. Mixing. Deliveries past thirty days have been: Bagging manufacturers, 19,788 bales; paper manufacturers, 2,461 bales. There are also about 10,000 Calcutta Threads in warehouse here."

WOOD PULP.—The product of Ground Wood is kept well cleaned up by deliveries on contracts and there is almost nothing offering. Prices remain as they have been.

WOOD FIBRE.—Chemical Fibre is in good demand and prices are regular. Domestic Soda Fibre ranges from 3¼ @ 3½c. for Bleached. Domestic Sulphite is moving at 2.60@3c., as to quality, for Unbleached and 3½c. for Bleached. Foreign grades are quoted as follows: Unbleached Pine, soda process, 2.65@3.05c.; Bleached, same process, 3½@3.90c.; Unbleached, sulphite process, 2¾@3.45c.; Bleached do., 3.90@4½c.; Bleached Straw Pulp, 4@4½c. Imports this week aggregated 489 tons, being 80 tons from Antwerp, 55 tons from Hamburg, 45 tons from Hull, 20 tons from Rotterdam and 289 tons from Stettin.

FOREIGN RAGS AND PAPER STOCK.—The market is quiet and there is not at present any disposition to make important transactions. Importers are not disposed to crowd goods to sale at concessions, such as buyers are asking for. Imports for the week aggregated 6,443 bales and 489 tons, being 2,068 bs. rags, 489 tons chemical fibre and 4,375 bs. manillas. Ports of shipment and quantities are as follows: Antwerp, 129 bales rags, 80 tons chemical fibre and 392 bs. manillas; Barcelona, 138 bs. manillas; Bristol, 72 bs. manillas; Calcutta, 787 bs. manillas; Central America, 150 bs. rags; Dundee, 456 bs. manillas; Glasgow, 54 bs. rags; Hamburg, 263 bs. rags, 55 tons chemical fibre, 613 bs. manillas; Hull, 603 bs. rags, 45 tons chemical fibre; Liverpool, 11 bs. rags, 1,011 bs. manillas; London, 184 manillas; Pillau, 481 bs. rags; Rotterdam, 377 bs. rags, 20 tons chemical fibre; Stettin, 289 tons chemical fibre and 722 bs. manillas.

DOMESTIC RAGS.—Domestic stocks are not plentiful, as the movement about absorbs the packings. Prices do not vary to any extent.

BAGGING, &c.—Arrivals of Bagging and other stocks have been large for the month just closed, and some lots on spot or nearby are being picked up in a quiet way at less than current rates, as importers are averse to storing. As a rule importers are asking 1¼c. for shipment, and they say that even at that there is no fair margin, owing to the fact that no concessions can be had in primary markets. There have been sales of nearby lots to manufacturers at 1¼c., but there are no important transactions reported. Manilla imports for the week aggregated 4,375 bales, being 392 bs. from Antwerp, 138 bs. from Barcelona, 72 bs. from Bristol, 787 bs. from Calcutta, 456 bs. from Dundee, 613 bs. from Hamburg, 1,011 bs. from Liverpool, 184 bs. from London, and 722 bs. from Stettin.

OLD PAPERS.—The market is quiet, although top grades lead in demand. We quote: No. 1 Hard White Shavings, 3⅛@3¼c.; No. 1 Soft White do., strictly free from wood, 2.65 @ 2.75c.; Soft White do., ordinary, 2¼c.; Old Ledgers, 2⅛c.; Solid Printed Books, 1.40@1.50c.; Mixed Shavings, No. 1, 1.30@1.35c.; Mixed Shavings, No. 2, 1@1⅛c.; Extra No. 1 Manillas, 1.40c.; No. 1 Manillas, ordinary, 1.20c.; No. 2 Manillas, .90@1.05c.; Light Book Stock, 60@65c.; Folded News, 55@65c.; Commons, 40c.; Bogus Manillas, 60@90c.; Straw Clippings, 55c.; Binders' do., 50c.

STRAW.—Prices are regular on fair trading. We quote: No. 1 Rye at 60@65c.; Short Rye at 40@50c.; Oat at 40c.

ROSINS.—The market has no particular animation, but values are steady. We quote in lots from the yard: Common to Good Strained, $1.60@1.65; E, $1.85; F, $1.95; G, $2.05; H, $2.10@2.15; I, $2.35; K, $2.50@2.52½; M, $2.80; N, $3.45, and W. G., $3.95.

CHEMICALS.—There is a moderate trade in progress in paper makers' chemicals. Under date of November 18 J. P. Brunner & Co. say of the Liverpool market: "Most lines of heavy chemicals are in a firm position, but Caustic Soda is an exception, this particular article being very sick and prices drooping. Soda Ash in fair request and minimum spot quotations are as follows: Caustic Ash, 48 per cent., £5 6s. 3d. per ton,; 57, 58 per cent., £6 7s. 6d. per ton; Carbonate Ash, 48 per cent., £5 9s. 9d. per ton; 58 per cent., £6 12s. 9d. per ton; Ammonia Ash, 58 per cent., £6 7s. 6d. per ton, all net cash. For special brands a considerable premium over above quotations has to be paid in several cases. Soda Crystals are scarce and firm at £3 12s. 6d. to £3 15s. per ton, less 5 per cent. Caustic Soda seems almost unsalable, and is very depressed. The nominal quotations are as follows: Prompt or December delivery—60 per cent., £9 10s. 6d. per ton; 70 per cent., £1015s. per ton; 74 per cent., £11 15s. per ton; 76 per cent., £12 15s.@13 per ton, all net cash. All 1892 delivery—60 per cent., £9 2s. 6d. per ton; 70 per cent., £10 5s. per ton; 74 per cent., £11 5s. per ton; 76 per cent., £12 5s. @£12 10s. per ton, all net cash. For parcels under 10 tons 5s. per ton extra is charged. These quotations are nominal; as for round lots on the spot prices are being cut, and it is daily expected that a reduction will be made for 1892 delivery. Bleaching Powder in hardwood casks is firm at £7 15s. per ton, net cash, for all quarters except United States and Canada, but at same time there is not much going on." The local market for Bleaching Powder is quiet and prices are easier for goods here. Caustic Soda is unsettled. Spot stock is light, but ample for requirements. Sal Soda is well cleaned up on spot. Caustic Soda Ash is in light call, and Alkali is not moving very freely.

CHINA CLAY.—The scarcity in high grade paper clays of certain brands still continues to inconvenience some of the trade. Prices are firm at $13@20 for foreign and $9@13 for North Carolina clay.

TWINES.—There is a steady business of fair proportion and values are regular. Quotation are as follows: Cordage—Manilla Rope, half inch, 10½c.; Sisal Rope, half inch, 7c.; New Zealand Rope, half inch, 6¼c.; Jute Rope, half inch, 5½c.; Sisal Hay Rope, 6¾c.; Sisal Lath Yarn, fine, 6¼c., and medium, 5¾c.; Jute Lines, 5½@6c.; Jute Ready, 5¾@7c.; New Zealand Hay Rope, 6¼@7¼c.; New Zealand Lath Yarn, fine, 5½c., medium, 5c. Twines—Hemp, 4½ and 6 B Russia, 12c.; 4½ and 6 A American, 12c.; 4½ and 6 D Jute, 9c.; 4½ and 6 L Jute, 8½c.; Hemp Ball, 18 B C, 17c.; 18 C, 15c. Russian Hemp Hay Rope, 9c.

COAL.—There is a decidedly better movement in Anthracite. At Chicago the hard coal business is spoken of as still of a hand to mouth character. Soft coal is very active, and much inconvenience is being caused by its scarcity. Boston reports a rather quiet market for hard coal; arrivals are very large and dealers are well supplied. Soft coal is not arriving as fast as needed. At Philadelphia local trade is active. At New York trade is quiet; soft coal jobbers report continued active shipments.

EDWIN BUTTERWORTH & CO.,
MANCHESTER, ENGLAND,
PACKERS OF ALL KINDS OF
Paper Stock, Cotton Waste and Buffalo Sizing,
Wood Pulp, Moist and Air Dry Pulp,
Soda and Ground Pulp,
(P) 83 GUNNY BAGGING, &c.,
OFFICE IN NEW YORK:
Tract House, 150 Nassau St., near Tribune Office,
JAMES PIRNIE, Manager.

WATERBURY
FELTS AND JACKETS
MANUFACTURED BY
H. WATERBURY & SONS CO.,
ORISKANY, N. Y.
The Largest Manufacturers of Paper Makers' Felts in the World.
Adapted to *every* grade of paper, from the *finest* to the *coarsest*. Our wet machine or pulp felts are *unequaled for durability*. Every felt guaranteed to give satisfaction or may be returned.

ESTABLISHED 1845.
MARTIN ROURKE & CO.,
MANCHESTER,
PACKERS AND SHIPPERS OF
MR
MANCHESTER GUNNY BAGGINGS,
Cotton Wastes and Paper Stock,
Trentham Street Mills,
Chester Road, Manchester, Eng.

PRICES CURRENT.

NEW YORK MARKET.

Paper Market.

DEALERS' SELLING PRICES.

Ledger and Record	$0.18	@	$0.24
Flat Caps, superfines	14	@	17
Flat Caps, fines	11½	@	13
Flat Caps, engine sized	7½	@	9
Blotting, American	8	@	15
Blotting, English	17	@	....
Book, super sized and calendered	6	@	9
Book, super sized and tinted	6	@	7½
Book, extra machine finish	5½	@	6
Book, machine finish, low grade	5	@	5½
News, No. 1	4	@	4½
News, rag and wood	3½	@	3¾
News, straw	4	@	5
Poster	5½	@	7
Hanging, superfine, No. 1	8	@	10
Hanging, superfine, No. 2	6	@	8
Hanging, macnine satin	4	@	4½
Hanging, white blank, No. 1	4	@	4½
Hanging, curtain	3½	@	4
Hanging, brown	2½	@	3
Colored papers, double mediums	6½	@	8
Colored papers, glazed medium	7½	@	8½
Colored papers, tobacco	8½	@	9½
Colored papers, tissues, 20 × 30, ℔ ream	1.10	@	1.35
Tissues, black, 20 × 30, per ream	1.40	@	1.50
White tissue, 20 × 30, ℔ ream	85	@	1.00
White tissue, 24 × 36, ℔ ream	1.30	@	1.60
Manillas, Flour sack, cream	10½	@	12
Manillas, Flour sack, drab	9½	@	11
Manillas, Rope, unbleached No. 1	9½	@	11
Manillas, Rope, unbleached No. 2	7½	@	9
Manillas, No. 1, light weight	6½	@	6¾
Manillas, No. 1, heavy weight	6¾	@	6¾
Manillas, No. 2	5	@	6
Manillas, Bogus	2¾	@	3¾
Wrapping Parchment	14	@	20
Tissue Manillas, full count, weight and size, 24 × 36, other sizes in proportion	75	@	80
Hardware, light colored, No. 1	9	@	10
Hardware, No. 1, glazed, tarred	7	@	8
Hardware, No. 1, glazed	4½	@	5
Binders' Boards, ℔ ton, No. 1	70.00	@	90.00
Binders' Boards, ℔ ton, No. 2	40.00	@	50.00
Strawboards, air dried, No. 1, ℔ ton	45.00	@	....
Strawboards, steam dried, XXX, ℔ ton	31.00	@	32.50
Strawboards, steam dried, XX, ℔ ton	29.50	@	30.00
Strawboards, air dried, Penn., ℔ ton	35.00	@	....
Strawboards, air dried, State, ℔ ton	37.50	@	40.00
Straw Wrapping, basis, 15 × 20, 15½ lbs. 20 sheets—			
36 × 40, from 38 to 42 lbs. ℔ rm	90	@	....
30 × 40, from 30 to 34 lbs. ℔ rm	....	@	72
24 × 36, from 24 to 26 lbs. ℔ rm	....	@	65
22 × 32, from 24 to 26 lbs. ℔ rm	54	@	....
20 × 30, 21 lbs., ℔ rm	....	@	48
20 × 30, from 14 to 17 lbs. ℔ rm	36	@	....
16 × 22, from 12 to 13 lbs. ℔ rm	27	@	....
18 × 28	....	@	32
15 × 20, 10 lbs. ℔ rm	23	@	24
15 × 20, from 7 to 8½ lbs. ℔ rm	18	@	....
14 × 18	....	@	15
12 × 16	....	@	14
11 × 15	....	@	12
Straw Wrapping, ℔ lb., heavy weight	1.75	@	1.85
Straw Wrapping, ℔ lb., light weight	2½	@	....
Cigarette Straw Tissue, per case of 100 boxes, 50 books to the box, 200 sheets to the book	21.00	@	30.00
Tea Papers, 16 sheet quires—			
12 × 18	18	@	20
14 × 20	22	@	....
Card Middles, ground wood	5½	@	6¾
Card Middles, long fibre wood	8½	@	9
Card Middles, rag and wood	6	@	9
Wood Fibre, bleached	3½	@	3¾
Wood Fibre, unbleached	3½	@	....
Pulp Lined Boards, single manilla, No. 100 and heavier	42.50	@	....
Pulp Lined Boards, double manilla, No. 100 and heavier	47.50	@	....
L F B, Blue Linens	2½	@	3
Gunny Bagging, No. 1	1.45	@	1½
Gunny Bagging, No. 2	1⅜	@	....
C S P F F F, No. 1 Cottons	3½	@	4
C S P F F, No. 2 Cottons	3¼	@	3½
C S P F, No. 3 Cottons	2½	@	2¾
C C C, Colored Cottons	1½	@	1¾
C F X, Low grade Cottons	1½	@	1¾
Extra Fine Blue Cottons	1⅞	@	2

Shavings and Old Paper.

White Collar Cuttings	2½	@	....
White Envelope Cuttings	3½	@	....
Hard White Shavings, No. 1	3½	@	....
Soft White Shavings, No. 2	....	@	2¼
Mixed Shavings, part white	1½	@	1¾
Ledger and Writing	....	@	2¾
Solid Stock	1.60	@	1.65
Book Stock, No. 1, light	3	@	....
Old Newspapers	1½	@	....
Imperfections	1½	@	....
Colored Papers	2	@	2¼
Manillas, No. 1	....	@	1.60
Hardwares, No. 1	⅞	@	1
Bogus Manillas	60	@	90
Commons	60	@	65
Binders' Board Cuttings	65	@	....
Strawboard Cuttings	60	@	65

English Rags, &c.

New Cuttings, cotton	5½	@	5¾
London Fines, cotton	3½	@	4
Outshots, cotton	2½	@	3
Seconds	1½	@	1.65
Thirds	1¼	@	1¾
New Print Tabs	2½	@	3
Checks and Blues	2¼	@	2¾
Light Prints	1½	@	2
Light Fustians	2	@	2½
Dark Fustians	1½	@	1⅞
Black Calicoes	1½	@	1¾
First Canvas Linen	3½	@	4
Second Canvas Linen	3	@	....
Gunny Bagging, No. 1	1¾	@	1 15-16
Gunny Bagging, No. 2	1¾	@	1¾
Burlaps Bagging, No. 1	1¾	@	1.80
Rope, Manilla	2½	@	....
Rope, Manilla, tarred	....	@	2
Jute Threads	2	@	2¼
Clean Jute Ropes	2	@	2½
Mixed Rope	1½	@	1½
Flax Tow	1¼	@	1¾

English Old Papers and Shavings.

Hard Shavings, No. 1	3	@	....
Soft Shavings, No 1	2¼	@	2¾
White and Colored Shavings, No. 1	1¾	@	2
White and Colored Shavings, No. 2	1½	@	....
Cream Post Shavings	2¾	@	2.81¼
Paper Collar Cuttings	3¼	@	3½
Briefs and Letters	2	@	2¾
Newspapers and Pamphlets, extra	1½	@	....
Old Newspapers	1	@	1¼
Broken News and Letters	⅞	@	1
Old Blank Books	2¼	@	2½
Old Printed Books	2	@	2¼
White and Buff Railway Sheets	1½	@	1¾

Hamburg Rags, &c.

N S C, New Shirt Cuttings	5½	@	5¾
S P F F F, No. 1 Linens	....	@	5¼
S P F F F, No. 2 Linens	....	@	4½
S P F, No. 3 Linens	....	@	3¾
F G, No. 4 Linens	2¾	@	3
F F, No. 5 Linens	2¾	@	2¾
Extra Fine Blue Linen, light color	3	@	3½

Alexandria Rags.

Whites	1¾	@	....
Blues	1¾	@	....
Colors	1¾	@	....

Japanese Rags.

Whites, ordinary	....	@	1¾
Blues, ordinary	....	@	1¾
Blues, selected	....	@	1

Chemicals, Coloring Materials, &c.

Alkali, 48 ₩ cent	1.45	@	1.50
Alum, lump	1.62½	@	....
Alum, ground	1.72½	@	....
Alum, Keystone	1¾	@	....
Alum, Diamond	....	@	3½
Alum, pearl	2¾	@	2¾
Alum, porous	2¾	@	2¾
Aluminous Cake	....	@	1¾
Anti-Chlorine	....	@	2¾
Bichromate Potash, American	....	@	10
Bleaching Powders, spot and to arrive	2.20	@	2½
Cambridge Ochre	11.25	@	....
Caustic Soda, 60 ₩ cent	3.05	@	3.06¼
Clay, China, English, ₩ ton	12.50	@	17.00
Clay, China, "Star"	12.50	@	....
Clay, China, "Keystone"	10.75	@	....
Clay, South Carolina, ₩ ton	9.50	@	10.00
Clay, Terra Alba, French, ₩ ton	1.00	@	1.12½
Clay, Terra Alba, American, No. 1	95	@	1 00
Corn Starch	3	@	3¼
Copperas, American	....	@	80
Extract Logwood	9½	@	....
Mineral Pulp	10.25	@	....
Orange Mineral	....	@	9½
Potato Starch	4½	@	4⅝
Prussian Blue, dry	20	@	35
Prussiate Potash, American	....	@	24½
Rosins, common to good strained, ₩ bbl.	1.60	@	1.65
Rosins, E, ₩ bbl	....	@	1.85
Rosins, F, ₩ bbl	1.95	@	....
Rosins, G, ₩ bbl	2.05	@	....
Rosins, H, ₩ bbl	2.10	@	2.15
Rosins, I, ₩ bbl	2.35	@	....
Rosins, K, ₩ bbl	3.50	@	2.52½
Rosins, M, ₩ bbl	2.80	@	....
Rosins, N, ₩ bbl	....	@	3.55
Rosins, W G, ₩ bbl	....	@	3.95
Sal Soda	1.10	@	....
Soda Ash, caustic, 48 ₩ cent	1.60	@	1.65
Soda Ash, carbonated, 48 ₩ cent	1.55	@	1.70
Soluble Blue	40	@	55
Spanish Brown	½	@	1
Sugar Lead, white	12	@	....
Sugar Lead, brown	7	@	....
Sulphate of Alumina	....	@	2¼
Sulphuric Acid, 66 ₩ cent	1	@	1¼
Ultramarine, blue	13½	@	17¾
Venetian Red	1	@	1¾
Vitriol, blue	5½	@	5¾
Yellow Ochre Rochelle	1.35	@	1.50

BOSTON MARKET.

Paper Stock.

White Rags, No. 1	4½	@	4⅝
No. 2 Whites	3½	@	....
Common Seconds	2½	@	....
Thirds and Blues	1½	@	....
Southern Mixed Rags	75	@	1¼
Colors, country	1	@	1¼
Colors, city	40	@	75
New Calicoes, light	2½	@	....
New Calicoes, dark	1½	@	2
Shirt Cuttings, best	5½	@	6
Shirt Cuttings, good	4½	@	5
Shirt Cuttings, unbleached	5½	@	....
Shirt Cuttings, unbleached No. 2	3½	@	4
Shirt Cuttings, cheviots	2½	@	3
Overall Cuttings, blue	3	@	3¼
Overall Cuttings, brown	2½	@	3
Shoe Rags, bleached	4½	@	4¾
Shoe Rags, unbleached	4	@	4¼
Shoe Rags, brown	3	@	....
Cotton Flannels, bleached	4	@	....
Cotton Flannels, unbleached	4	@	....
Corset Rags, drab	3½	@	3¾
Corset Rags, white	4½	@	5
Old Corsets	30	@	35
Tailors' Seconds	2½	@	3
Tailors' Colors	40	@	50
Cotton Canvas	3¾	@	4
Cotton Canvas, No. 2	1½	@	2
Linen Canvas	2½	@	3
New Canvas Cutting	5½	@	6
Insole Canvas	5	@	6
Print Papers, best	30	@	40
Print Papers, ordinary	30	@	....
Folded News	....	@	45
Old Waste Papers	20	@	25
Manilla Paper, No. 1	1.40	@	1.50
Manilla Paper, good mixed	75	@	1.05
Manilla Paper, blues	50	@	70
Mixed Book Stock	1.00	@	1.10
Books and Pamphlets	1½	@	1.65
Book Stock, light	....	@	1
Ledgers and Letters	2¼	@	2¼
Soft Book Shavings	2¼	@	....
Hard White Book Shavings	2½	@	3
Leather Board Chips	....	@	....
Straw Chips	50	@	60
Shivey Bagging	1½	@	....
No. 1 Factory Bagging	....	@	1.15
Burlap Bagging	....	@	1.25
Burlap Bagging, large pieces	1.65	@	1.75
Kentucky Bagging	1½	@	1¾
Mixed Bagging	¾	@	1
No. 2 Bagging	75	@	80
Shakings, soft	½	@	1
Tarred Shakings	1	@	1¼
Standing Rigging	4½	@	....
Standing Rigging, foreign	3½	@	....
Bolt Rope	2	@	2½
Oakum Junk, No. 2	2½	@	....
Tarred Paper Junk	1½	@	....
Tarred Paper Junk, inferior	1	@	....
Manilla Rope	2¾	@	....
Tarred Manilla	1½	@	....
Hemp Strings	2¾	@	....
Sisal Strings	....	@	1¾
Wool Strings	1½	@	....
Flax Tow	¾	@	1¼
Flax Waste	¾	@	1¼

New Papers.

Superfine Book	7	@	8
Fine Book	6	@	7
News, rag and wood	5½	@	6
News, No. 1, all rag	6	@	6¼
Manilla, Cream Rope	9½	@	10
Manilla, No. 1, Rope	8½	@	9
Manilla, Extra Jute	6	@	6½
Manilla, Jute and Gunny	5½	@	6
Manilla, No. 2	5	@	5¼
Manilla, Bogus	4	@	5
Hardware, No. 1, tarred	7½	@	8¼
Hardware, No. 2	7	@	8
Hardware, red	5	@	6
Strawboards, air dried, ₩ ton	50.00	@	60.00
Strawboards, steam dried, ₩ ton	30.00	@	40.00
Straw Wrapping, heavy	1.90	@	2¼
Straw Wrapping, light	2¼	@	3½
Binders' Boards, ₩ ton	53.00	@	60.00
Leather Board, Common, ₩ lb	3	@	4
Leather Board, counter	5	@	8
Leather Board, extra	8	@	10
Tar Boards, ₩ ton	100.00	@	110.00

Chemicals.

Alkali	1.40	@	1.45
Aluminous Cake, currency	1¼	@	1½
Alum, American ground	2	@	2¼
Alum, American lump	1⅞	@	2
Anti-Chlorine	3	@	3¼
Bi-Chromate Potash, American	10½	@	....
Bleaching Powders	2.12½	@	2.15
Blackley Blue	2.00	@	3.00
Caustic Soda, 70 ₩ cent. (for 60 ₩ cent.)	2.90	@	2.92½
Clay, English, ₩ ton	14.00	@	18.00
Clay, American, ₩ ton	13.00	@	14.00
Copperas, ₩ lb	¾	@	1
Extract Logwood	5¾	@	6¾
Lime, Rockland, ₩ bbl	95	@	1.00
Prussian Blue, ₩ lb	50	@	60
Prussiate Potash, American, yellow	....	@	18½
Prussiate Potash, red	51	@	52
Rosin, common strained, ₩ bbl	....	@	....
Rosin, E	....	@	1.45
Rosin, F	1.50	@	....
Rosin, G	....	@	1.55
Rosin, extra pale	....	@	....
Sal Soda, English, ₩ lb	1.10	@	1.12½
Soda Ash, 48 ₩ cent. caustic	....	@	1.55
Soda Ash, 48 ₩ cent. carbonated	....	@	1.60
Soluble Blue	55	@	65
Sugar Lead, white	12½	@	13
Sugar Lead, brown	7¾	@	8½
Sulphuric Acid, 66°	1¾	@	1¾
Terra Alba, ₩ ton	15.00	@	20.00
Ultramarine, ₩ lb	12½	@	16
Venetian Red, ₩ lb	1¾	@	1¾
Vitriol, Blue	5½	@	5¾
Yellow Ochre	½	@	2

Wants and For Sale.

Twenty-five cents per line of eight words each insertion. No charge less than one dollar.

A POSITION AS SUPERINTENDENT IS wanted in a sulphite or manilla mill by an experienced man; best of references. Address RELIABLE, care Paper Trade Journal.

A MACHINE TENDER WANTS A POSITION; has been running on book, news and manilla for past ten years; can furnish the best of reference; a pusher. A. A., care of the Journal.

SITUATION WANTED—BY A COMPETENT millwright of twelve years' experience in news, manilla, chemical and book mills; best references. H. K., care Paper Trade Journal.

WANTED—POSITION AS FOREMAN IN A news, book or manilla mill; now foreman in one of the largest mills in the country; good references. A. B., care Paper Trade Journal.

WANTED—AN EXPERIENCED SALESMAN on wrappping papers and twines. Address PAPER, Paper Trade Journal.

WANTED—FIRST-CLASS SALESMAN FOR book paper. Only those with a well established trade need address MANUFACTURERS, care Paper Trade Journal.

WANTED—SITUATION AS FOREMAN IN A tissue mill; have handled all kinds of stock; can give good reference. Address FOREMAN, care Paper Trade Journal.

WANTED—POSITION TO RUN FOURDRINier machine or engines; had seventeen years' experience; am married and temperate; good references. GEO. A. LONG, New Market, N. H.

WANTED—A GOOD SECOND-HAND 75 horse power steam engine, automatic cut-off. Paper manufacturers or others having such an engine may find a purchaser by corresponding with the EMERSON MFG. CO., Lawrence, Mass.

WANTED—SITUATION FOR A MACHINE tender; also situation for an engineer; references first class. Address Lock Box 672, Holyoke, Mass.

FOR SALE—PULP MILL, WITH WATER power of 500 horse, all new; or will take partner and build paper mill; good location, clear spring water, cheap fuel and low freight rate. Address YALE, care Paper Trade Journal.

FOR SALE—ONE STACK SHEET CALENders, six rolls, 26 inch face, and one stack six rolls, 28 inch face; all complete, in good order, and with Harlow feeds. HURLBUT PAPER MFG. CO., South Lee, Mass.

FOR SALE—CHEAP, MANILLA MILL OR machinery in same, consisting of 62 inch machine, three engines and Jordan, all in first-class condition. Address B. W., care Journal.

TISSUE MILL FOR SALE—IN SUCCESSFUL operation; good location; on reasonable terms. Address INDUSTRY, Care Paper Trade Journal.

FOR SALE—TWO MARSHALL REFINING Engines; nearly new; in first-rate condition. EMERSON MANUFACTURING COMPANY, Lawrence, Mass.

FOR SALE—THREE SECOND-HAND JORDAN engines, warranted as good as new, and have been taken from mills and replaced by those of our own manufacture; also, one 400 lb. and one 700 lb. beaters with new tubs. EMERSON MFG. CO., Lawrence, Mass.

FOR SALE OR TO LEASE.

A very desirable water power, partially improved, situated in the Northern part of Vermont, within half a mile of Central Vermont Railroad station; convenient to market and wood. Dam, bulkhead and raceway completed.

During dry season, with present development, shows over 1,400 horse power. Railroad willing to put side track to buildings. For particulars apply to C. B. HEWITT, 48 Beekman St., New York.

FOR SALE.

Two 76 in. Hammond Cutters.

All in good order and ready to run.

ALBION PAPER CO., Holyoke, Mass

FOR SALE.

A 84 inch Harper Fourdrinier part, which was new three months ago and is in first-class condition; it is to be sold and replaced by a four cylinder part.

A set of eleven (11) 26×72 dryers, complete with frames, &c.

Two stacks of chilled iron calender rolls, 70 inch face.

All of the above are in good condition; will be disposed of at very reasonable prices and can be seen in operation by applying.

THE PUSEY & JONES COMPANY, Wilmington, Del.

PAPER MILL FOR SALE.

The subscriber offers for sale his new mill, just completed, situated at Newton Lower Falls, Mass.

Will sell whole or a part interest to a practical and competent paper maker.

Mill is thoroughly equipped with new and modern machinery, consisting of one 84 inch Fourdriner and one 62 inch Cylinder Machines, ten Beating Engines, Globe Rotary, two Jordans, Drainers, Stuff Chests, Electric Light Plant, Power Elevators, and in fact everything that goes to make up a first-class paper mill. Freight can be obtained to and from Boston at $1.50 per ton, which includes delivery at each end, and product of mill can easily be placed in this market.

Power consists of three steam engines, with ample boiler capacity; also water power. Also about one and one-half acres of land, tenement houses, &c.

ROBERT BISHOP,
157 West Sixth St., South Boston.

FOR SALE.

A 68 inch Single Cylinder Paper Machine.
One iron Rag Engine.
Two sets Irons for wood tub Rag Engines.
One 60 horse power Steam Engine.
One 20 horse power Steam Engine.
Two Tubular Boilers, 60 inches diameter, 14 ft. long.
Two American Water Wheels, 42 and 66 inches diameter.
One Beloit Water Wheel, 50 inches diameter.
Address WALDRON PAPER CO., Waldron, Ill.

FOR SALE.

One-half or two-thirds interest in the Delphos Paper Mills (wrapping 8,000 lbs., twenty-four hours), at Delphos, Ohio, now owned and operated by the Scott Paper Mfg. Co.; 10 rods by 75 rods of ground; mill one and two stories, brick; iron and slate roofs; 45 horse power water and 100 horse power steam; two boilers; two engines; always bountiful supply of soft, pure water; wheat and rye straw $2.50 per ton; oil, at 35 cents a barrel, used as fuel this equals nut coal at $1.25 a ton; 62 inch machine; eleven dryers; two beaters; one Jordan; iron lathe; pipe tools; in fact, all machinery of a complete first-class mill. Everything in good order and now running. Would sell one-half, two-thirds or all on a fair basis of cost; terms of payment to be agreed upon. Delphos is a town of 5,000 inhabitants and the shipping facilities are excellent—four railroads and canal. Reasons for selling are that one of the owners died and it is necessary to settle up the estate, and none of the present owners live in Ohio. Address

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SPECIAL BARGAINS.

Four 100 H. P. Horizontal Tubular Boilers.
One 75 " " " "
Two 10x24 Corliss Engines.
One 22x48 " " "
One No. 10 Boggs & Clarke Centrifugal Pump.
One No. 9 Sturtevant Exhauster.
One No. 3 " "

D. B. CRUICKSHANK,
243 Dyer Street, Providence, R. I.

BARCAINS.

One 68 in. Fourdrinier Paper Machine, consisting of gun metal couch and press rolls, sixteen 48 in. diameter dryers, two stacks chilled calenders, revolving reel, cutter, slitter, Manning winder, Marshall driving train, Gould screen.

One 16½ × 42 Fitchburg, new seven months ago.

One 18 × 42 Geo. H. Corliss engine in good order.

One 16 × 36 Harris-Corliss engine, new.

One 13 × 34 in., almost new, Brown condensing steam engine, 75 horse power.

Two horizontal Gould refining engines.

One Horne Jordan refining engine.

One 7 × 22 ft. and one 6 × 16 feet rotaries.

One Marshall refining engine, with new filling and new knives, as good as new engine.

One 48 in. cylinder paper machine.

One 66 in. two cylinder paper machine, complete.

One pair 30½ in. horizontal Leffel wheels, with case.

One 48 in. Sheridan cutter, nearly new.

Large lot H. & S. pumps, from 2 in. to 10 in.

Send for our catalogue.

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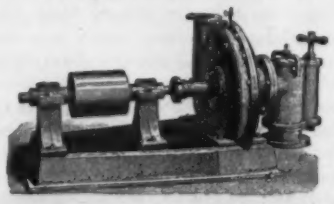
Exchange Building, BOSTON.

CENTRIFUGAL . . . PUMPS,

Horizontal and Vertical, for any service. Cheap, durable and efficient.



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Also Engines, Boilers, Shafting, Hangers, Belting, Wood Pulleys and General Mill Supplies.

One 8x23 ft. Rotary Boiler for paper mill for sale low. 90, 70, 50, 35 and other sizes Automatic Engines for immediate delivery.

Write us for prices and mention this paper.

PLEASE CUT THIS OUT.

All steel fly bars must go! Laid fly bars and bed plates made with natural gas are much better and practically as cheap as all steel. Our Paper Trimming, Stop Cutter and Rag Knives guaranteed superior in make and temper to all others by

ANDERSON KNIFE AND BAR WORKS, Anderson, Ind.

Write for special information.

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General and Paper Mill Machinery, Holyoke, Mass., Agents for New England.

LIBERTY PRESS,

Half medium, in first-class condition, for sale at a sacrifice. Address

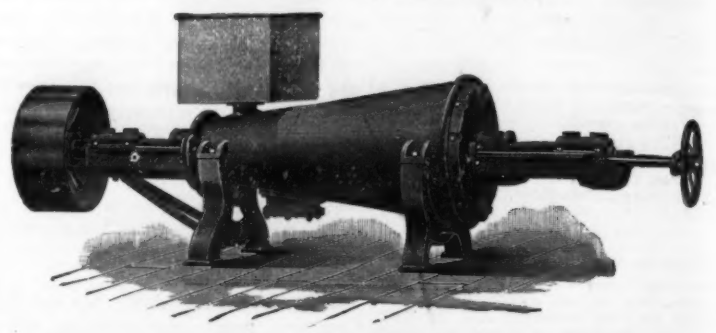
DAVIS,
Office Paper Trade Journal.

The BLACK & CLAWSON CO.,

— MANUFACTURERS OF —

Paper Mill Machinery,

FOURDRINIER, HARPER IMPROVED FOURDRINIER AND CYLINDER MACHINERY.



Jordan Engines. Jordan Engines Refilled.

Screens, Calenders, Rag Cutters, Cylinder Molds, Deckel Straps, Paper Cutters, Screen Plates, Dandy Rolls, Stuff Box Trucks, Iron and Brass Castings.

REVOLVING REELS AND STACK REELS.

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MANUFACTURERS OF

Giant Paper Stock Cutters, Four Sizes,

AND

Improved Angle Bed Plates.

Roll Bars, Bed Plates, Rag Cutter Knives, Chipper Knives, Barker Knives, Paper Stop Cutter and Trimming Knives.

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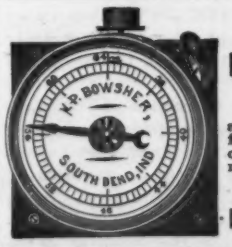
Manufacture Cylinder Paper Machines, Rag Engines, Paper Cutters, Super and Machine and Chilled Iron and Paper Roll Calenders, Stuff and Fan Pumps, Shafting, Pulleys, Gearing and Paper Mill Machinery generally. Rolls Accurately Reground.



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BOWSHER'S SPEED OR MOTION INDICATOR

Is indispensable in obtaining a uniform speed of machinery.

It is used everywhere that a uniform motion is essential or desirable, and is one of the most profitable little devices ever put in a mill. Aside from its great convenience it will pay for itself in thirty days in dollars and cents. Dial, 12 inches diameter. A glance at the dial from any part of the mill tells the exact speed. Weight, 10 pounds.

Sent to any responsible party on thirty days' trial.

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TWINES

Paper Makers' Twines a Specialty.

ASK FOR SAMPLES AND QUOTATIONS.

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MANUFACTURERS TO

Send us Samples of their Stock

OF PAPER ON HAND,

WITH BOTTOM TEN DAY CASH PRICES.

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We trade Stock or Cash for Paper.

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14 and 16 So. 7th Street,
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SUCCESSORS TO WM. ANGUS & CO.,

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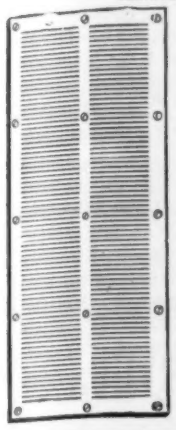
IN THE FAMOUS PANHANDLE COUNTRY we are organizing a series of $50,000 National Banks in good county seat towns. Four such banks already started and netting 12% and over; others will follow; the finest part of Texas; banking capital needed; legal rate, 10%; new stocks sell at par; old established ones at moderate premium; our stocks held all over the Union. We also supply many clients with good Texas Municipal 6% twenty year BONDS and five year 8% choice CITY MORTGAGES. Before investing write for bank statements, circulars, maps, &c., to CITY NATIONAL BANK, Wichita Falls, Tex.

JUDSON & WILLIAMS,

HOLYOKE, MASS.,

MANUFACTURERS OF



SCREEN PLATES

—OF—

BRASS

—OR—

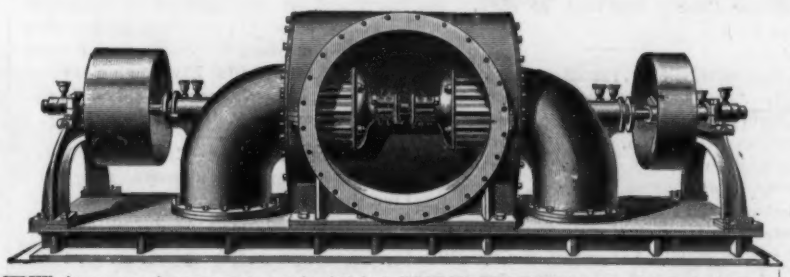
CAST METAL.

REPAIRING

OLD SCREEN PLATES

A SPECIALTY.

THE VICTOR TURBINE.



THE above engraving represents a pair of 12 inch **VICTOR TURBINES** arranged on a horizontal shaft, with Cast Iron Flume, Draft Tubes, End Bearings for Shaft, and Driving Pulleys complete, all mounted upon a substantial cast iron bed plate. The entire arrangement is very complete and strictly first class in every particular. We are now prepared to furnish Victor Turbines either single or in pairs on horizontal shafts and where the situation admits of their use we recommend them.

UPRIGHT or HORIZONTAL.

In use in a large number of best Paper and Pulp Mills in this and other Countries.

Possesses more than Double the Capacity of ordinary Water Wheels of same Diameter, and has produced the Best Results on Record, as shown in the following tests at Holyoke Testing Flume:

SIZE WHEEL.	HEAD IN FEET.	HORSE POWER.	PER CENT. OF USEFUL EFFECT
15 inch.	18.06	30.17	.8932
17½ inch.	17.96	36.35	.8930
20 inch.	18.21	49.00	.8532
25 inch.	17.90	68.62	.8584
30 inch.	11.65	52.54	.8676
35 inch.	17.29	133.19	.8497
40 inch.	16.49	148.98	.8253
48 inch.	15.51	179.29	.8202

Such results, together with its nicely working gate and simple, strong and durable construction, should favorably commend it to the attention of all discriminating purchasers.

THESE WHEELS ARE OF VERY SUPERIOR WORKMANSHIP AND FINISH.

THE VICTOR WHEEL is particularly adapted to setting on **HORIZONTAL SHAFT,** DISPENSING ENTIRELY WITH GEARS.

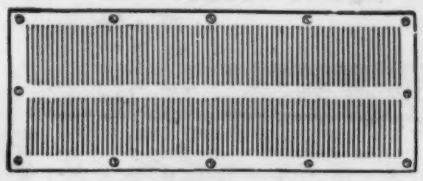
STATE YOUR REQUIREMENTS AND SEND FOR CATALOGUE TO THE

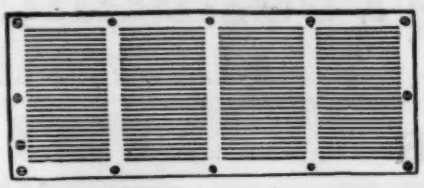
STILWELL & BIERCE MFG. CO., DAYTON, OHIO, U. S. A.

ANNANDALE

Screen Plate Co.,

PATERSON, N. J.





Manufacturers and Repairers of

SCREEN PLATES.

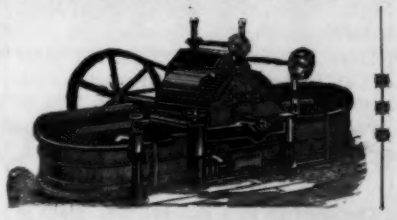
Our new Plates are made of the **VERY BEST METAL,** and for price and durability cannot be surpassed.

OLD PLATES RE-CLOSED.

THOMPSON & CAMPBELL

(Successors to KREIDER, CAMPBELL & Co.),

1030 Germantown Avenue, Philadelphia, Pa.



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An improvement in Washing Engines.

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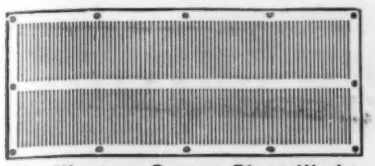

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Accurately, Promptly and Cheaply.

All **NEW PLATES** are made from our "Special Brass," which is the best quality obtainable.

OLD PLATES Repaired, Closed and Resawed to your entire satisfaction.

In ordering, give width of slot in thousandths of an inch, if convenient.

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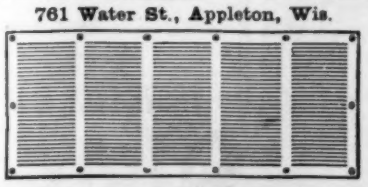

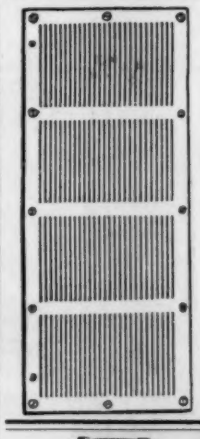

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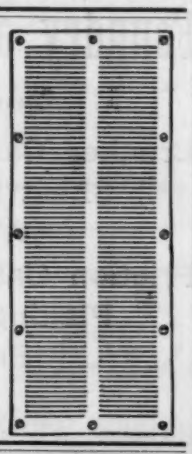

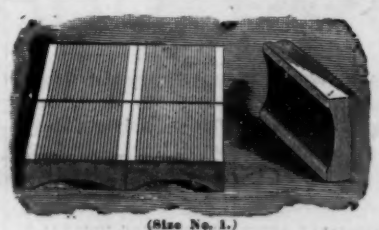

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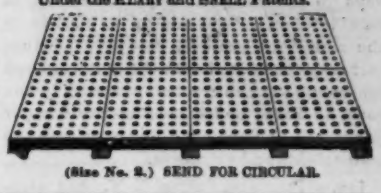

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VENTILATE! VENTILATE!

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Machine Rooms, Rag Dusters, Etc.,

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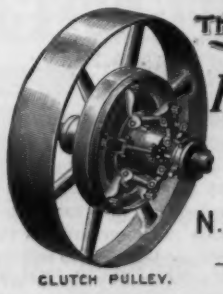

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All persons are liable to prosecution who make, buy or use Paper Testers that confine and break paper within its edges, as my Patents cover that method.

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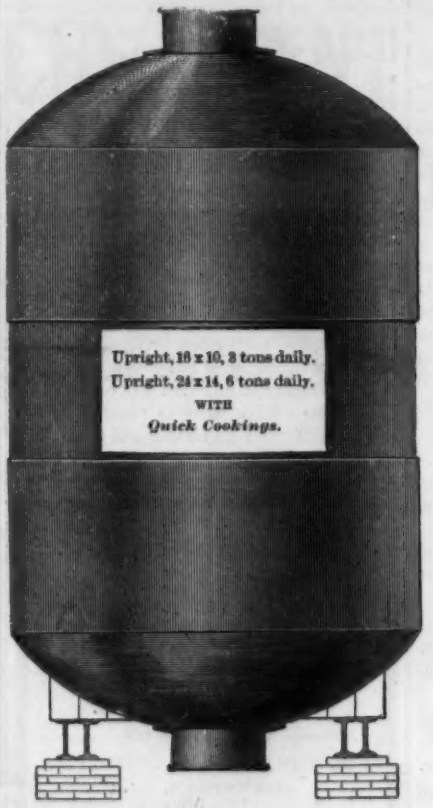

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THE INTERNATIONAL SULPHITE FIBRE AND PAPER COMPANY,

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Are prepared to grant licenses under royalty to operate their **Indestructibly Lined Digesters** of any capacity required. Upright or Horizontal, Slow or Quick Cookings.

Our Upright Digesters can be manufactured much cheaper than any other kind now in use, and have a capacity of 3 to 6 tons Air Dry Fibre.

Our Digesters are absolutely acid proof and require no repairs.

We invite investigation of our digesters, used continuously for more than four years, and refer to the Alpena Sulphite Fibre Co., Alpena, Mich.; Detroit Fibre Co., Detroit, Mich.; Michigan Sulphite Fibre Co., Port Huron, Mich.; Dexter Sulphite Pulp and Paper Co., Dexter, N. Y.; P. C. Cheney Co., Manchester, N. H.; the E. B. Eddy Manufacturing Co., Hull, P. Q., Canada; the Manufacturing Investment Co., of New York, mills at Madison, Me., and Appleton, Wis. Correspondence solicited.

THE ELECTRIC VENTILATOR

IS THE BEST ONE MADE FOR DYE HOUSES, PAPER MILLS, AND ALL CLASSES OF BUILDINGS WHERE THOROUGH VENTILATION AND REMOVAL OF STEAM IS WANTED. PLEASE READ ACCOMPANYING TESTIMONIALS.

Tiffin, Ohio, February 25, 1890.

Reardon & Ennis—Replying to yours of February 21, would say: We have been using your Ventilators for three or four months and think well of them. There was only one error we made in putting them in—we did not put in enough. Where they are stationed they carry off the steam, but we should have distributed them through our entire machine room at intervals. AMERICAN STRAW BOARD COMPANY.

Lawrence, Kan., April 22, 1891.

Reardon & Ennis—We have just received the large 36 inch Ventilator, which makes the fifth. They do good work, and we can recommend them for Paper Mill use or any similar factory. LAWRENCE PAPER CO.

These Ventilators are in use on Ohio Paper Co.'s mill, Niles, Mich., and many others. For prices, &c., address the manufacturers,

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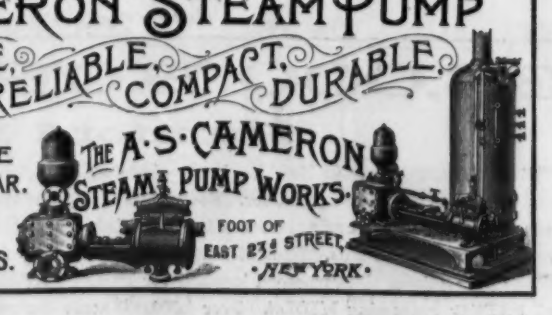

Manufacturing News.

EASTERN STATES.

The Platner & Porter Paper Manufacturing Company, Unionville, Conn., is preparing to set a new engine.

The Union Machine Company, Fitchburg, Mass., has shipped a new Fourdrinier machine to the Winnipiseogee Paper Company, Franklin Falls, N. H.

Work on the new paper mill at Jay, Me., is being pushed as rapidly as possible.

The Umbagog Pulp Company, Livermore Falls, Me., is putting in a reservoir on the hill back of the mill. It will fill it by pumping water from the river.

Parties from Vermont are negotiating with Morley Brothers for the purchase of the paper mill at East Lee, Mass.

Caugher & Sullivan's paper mill at Lancaster, N. H., which is being erected on the site of that recently burned, will start up early in February.

The new Russell-Jarvis paper mill plant at West Claremont, N. H., will be ready for business probably before the end of this month.

The Glen Manufacturing Company's paper mill at Berlin Falls, N. H., is running full time, making paper for the New York *Sun*.

Edwin Potter & Son will soon begin manufacturing cotton cord at Black Rock, R. I.

A new side track, three-quarters of a mile long, is being laid from the Concord Railroad to the paper mills of the P. C. Cheney Company, Manchester, N. H. This will be of great advantage to the paper mills.

The Yantic Paper Company, Greenville, Conn., had a serious breakdown at its mill last week, which kept it idle for a number of days. The Sibley Machine Company repaired the break and the mill is now running.

The Stoddard Paper Company's mill at Versailles, Conn., which has been closed, was reported to have been purchased by P. G. Gordon, a local paper stock dealer, but the bargain was broken off before it was consummated, and now another stock dealer has made an offer for the property. This has not been accepted as yet.

MIDDLE STATES.

By a deed which has been recorded in the office of the County Clerk of Oneida County, N. Y., Herman Haupt, of Philadelphia, conveys to the Sauquoit Paper Company, in consideration of the sum of $47,286.38 in the capital stock of said company, all that certain piece of land with the buildings and tenements thereon erected, situated in the town of Paris, and known as the "upper paper mill of Sauquoit" together with the water rights and privileges.

James Pearman, Fulton, N. Y., has shipped to McKnight, of Seneca Falls, N. Y., two 800 pound beating engines, for use in the tissue mill at that place; he has also shipped one of his new bundle cutters to Sweet & Son, Phœnix, N. Y.

The new Barber paper mill at Fulton, N. Y., is nearly finished and will probably be started up by January 1.

F. Dilts, Fulton, N. Y., who has been ill lately, is again attending to business. He shipped a new bundle cutter to the Mottville Paper Company last week.

The Oswego River Pulp Company, Fulton, N. Y., has completed its new building and set new boilers. Shavings will be used for fuel and steam will be employed for reheating purposes.

An "Aerophor" dampener has been put on the machine of the Analomink Paper Company, Experiment Mills, Pa., and a new 86 inch wet machine has been added to the plant. This makes two wet and one 76 inch Fourdrinier machines in use in the mill. The company has also been putting in a Stevens digester, built by the Emerson Manufacturing Company, Lawrence, and a new steam boiler, 14 feet long and 66 inches in diameter, built by Theo. Smith & Brothers. This boiler is of about 180 horse power and is to be used to supply steam for boiling purposes. The company is putting in C. F. Logan's patent steam circulating apparatus on four digesters used for making soda fibre.

WESTERN STATES.

Men are working night and day to complete the new paper mill at Marinette, Wis.

The Bardeen Paper Company, Otsego, Mich., has been setting up two large filters for its No. 2 mill.

The second paper staining machine at the mill of the Badger Paper Company, Kaukauna, Wis., was started up on November 20.

The refuse from the fibre and paper mills at Kaukauna, Wis., is said to be very destructive to fish life in the lower Fox River.

An addition is being built to the American Strawboard Mill at Lockport, Ill.

The Falls Manufacturing Company, which has pulp mills on the Oconto River, Wis., has begun suit against the Oconto River Improvement Company and the Northwestern Improvement Company. The action is brought to obtain an injunction to restrain the improvement companies from interfering with the natural flow of water. The suit is brought in Oconto County. The mill men claim that the lumbermen have been holding the water for about two years, but it was done to a greater extent this season and they are determined to test their rights. There is the same trouble on other rivers and it is probable that similar actions will be brought shortly.

The San Francisco, Cal., papers report that the following named mills on the Pacific Coast have agreed to "pool their issues:" South Coast Paper Mill, at Soquel; Enterprise Mills, Antioch; Corralitos Mills, Watsonville; Straw Paper Company, Lebanon, Ore.; Crown Paper Company, Oregon City, Ore.; Columbia River Paper Company, La Camas, Wash., and Bridal Veil Paper Mills, Bridal Veil, Ore.

There is a proposition to build a paper mill at Laramie, Wy., under consideration by the Board of Trade of that city.

Two new 300 horse boilers are being built for the Anderson (Ind.) Paper Company.

SOUTHERN STATES.

The erection of a mineral fibre plant is talked of at Roanoke, Va.

The Piedmont Pulp and Paper Company, Piedmont, W. Va., has put a new boiler and engine in its pulp mill and will soon put in four additional digesters.

Tariff Decisions.

The Board of General Appraisers has rendered the following decision:

Frost & Adams *v.* Collector at Boston, Mass.—"Bristol board," imported June 10, 1891. The merchandise consisted of bristol board, an article composed of several layers of paper pressed and pasted together. Duty was assessed at 35 per cent. under paragraph 420, N. T., as cardboard. The claim of the appellants that it was dutiable at 25 per cent. as drawing paper, under paragraph 422, was sustained.

In Town.

S. W. Wilder, H. M. Whitney and George Andrew, Boston, Mass.; Mr. Hoyt, Saratoga, N. Y.; W. F. Whiting, Holyoke, Mass.; T. S. Safford, Camden, N. J.

Legal Decisions.*

[SPECIALLY REPORTED FOR THE JOURNAL.]

Recovery of Damages from Telegraph Company.—Special damages cannot be recovered from a telegraph company for failure to transmit or deliver a telegram, unless it can be shown that the company knew that such damages as those claimed would result from a failure to deliver the message.—*Western Union Telegraph Company v. Lively, Court of Appeals of Texas, 15 S. W. Rep. 197 (59).*

Failure of Railroad Company to Furnish Cars on Request.—By refusing to furnish cars on request a railroad company does not incur the penalty imposed by Rev. St. Tex. 1879, art, 279, providing that for refusing to transport goods common carriers shall incur a penalty of not less than $5 nor more than $500, to be recovered by the owner of the goods. Article 279 is repealed by implication, so far as concerns railroad companies, by Sayles' Civil St. Tex., art. 4227, providing that, in case of the refusal of any such corporation to transport any property or to deliver the same at the regular time, such corporation shall pay all damages, and art. 4227 sec. 3, that if cars are not furnished when applied for the railroad company shall forfeit $25 per day for each car.—*San Antonio and N. P. Ry. Co. v. Bailey, Court of Appeals of Texas, 151 S. W. Rep. 203 (147).*

Misappropriation of Funds by Agent.—In a civil action to recover money claimed to have been embezzled or misappropriated by an agent, it is not enough to show that the money in question was received by him, as he had a right to receive it, but the plaintiff must go further and show that the money so received was actually misappropriated or embezzled, and until this is shown the defendant is not put upon his defense.—*Panama Railway Co. v. Johnson, Supreme Court of New York, 12 N. Y. Supp. 499 (80).*

Conveyance Not Fraudulent as to Creditors.—After a person has loaned money to a member of a firm for its use it will not be fraudulent for him, as against other firm creditors, to take a deed of the partnership property at a fair market value. Nor would it change the case if he knew that the partners had a fraudulent purpose in conveying it to him, so long as he acted in good faith. That when the real estate was transferred it was orally agreed that one of the partners should remain on the land, without payment of rent, to care for the cattle of the party to whom the conveyance was made, would not impeach the conveyance for fraud. It is also lawful for a person to purchase personal property of an insolvent, if it is done without knowledge of fraud, and creditors cannot have such a transaction set aside.—*Strong v. Swafford, Supreme Court of Iowa, 47 N. W. Rep. 1023 (152).*

Undue Preference to Creditor.—Immediately before making a general assignment for the benefit of creditors the assignors confessed a judgment in favor of the father of one of them, they and he knowing that the amount of such judgment was more than one-third of the assets of the firm. A judgment setting aside such confession, as made in contemplation of the assignment and as part thereof, for the purpose of unduly preferring the creditor, contrary to the New York statute, which restricts such preferences to "one-third in value of the assigned estate," should be sustained, although there was no finding in fact that when the debtors confessed the judgment they contemplated the assignment.—*Berger v. Varrelmann, Supreme Court of New York, 12 N. Y. Supp. 640 (125).*

George W. Millar & Co., paper dealers, 62 and 64 Duane street, have placed four electric lights in front of the building, and when the current is on the illumination draws a great deal of attention to the store, as well as greatly assisting those who are loading and unloading the firm's goods.

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THE "Hamilton" Felt.

"Best and Most Economical Made."

Wise Paper Makers don't always want to buy high priced imported Felts, nor do they want to experiment with inferior grades of domestic ones. The "Hamilton" answers their requirements in every respect.

In ordering, mention kind of stock used, quality of paper made and speed of machine.

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The W. S. Tyler Wire Works Co.,

CLEVELAND, OHIO,

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FOURDRINIER WIRES,

Cylinder Faces and Washer Wires.

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Sheet Super-Calenders,
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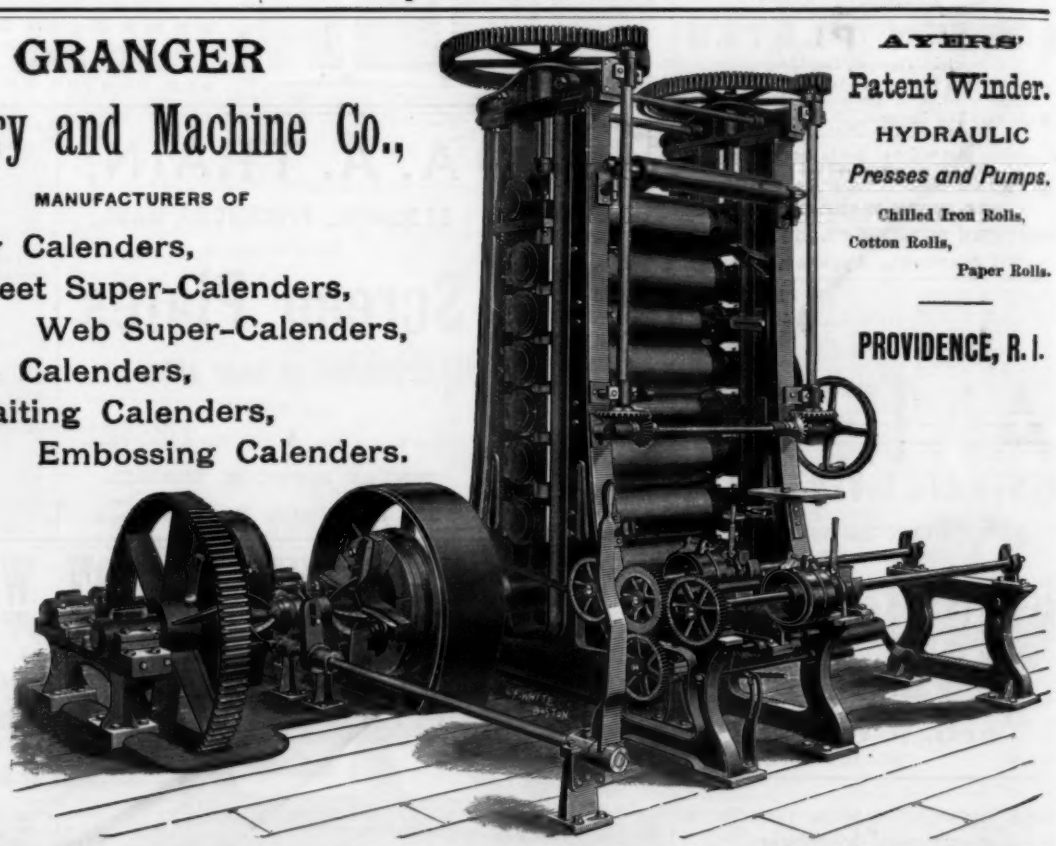

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Chilled Iron Rolls,
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Paper Rolls.

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A GLASS VALVE, non-corrodible, non-adhesive and impenetrable.

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AUTOMATIC FIRE ALARM AND EXTINGUISHER CO. (Limited),
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Builders of HARRIS-CORLISS ENGINES with Wm. A. Harris' Patented Improvements.

Forty-five Regular Sizes, from 40 to 2,000 Horse Power.

All sizes have our new design of VALVE GEAR, CROSSHEAD, NOISELESS DASH POTS, PILLAR BLOCK and ENGINE FRAME, with its Heavy Intermediate Support. Also many other improvements in design and construction with enlarged CRANK PINS and MAIN JOURNALS and CROSSHEAD GIB surfaces. In fact, all wearing surfaces are materially enlarged, and every detail has received the most careful attention, insuring DURABILITY of ENGINE, ECONOMY in the use of STEAM and REGULARITY in SPEED.

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We construct these engines either Condensing, Non-Condensing or Compounded in various forms, jacketed or unjacketed, horizontal and vertical.

Our engines are adapted for use in Electric Light, Railway and Power Plants, Silk, Cotton and Woolen Mills, Flouring Mills, Lumber Mills, Rubber Mills and any place requiring regular speed and an economical use of steam. Small parts are made interchangeable and kept in stock.

When writing mention this Paper. We solicit correspondence, and when desirable personal attention will be given to location and arrangement of plants.

WM. A. HARRIS, PRESIDENT and TREASURER.

Send for Engineers' and Steam Users' Manual, 75 Cents.

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THE WOODCOCK CLUTCH.

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Finest Water Power in New England. Located in Oxford County, Me., on Androscoggin River. Power practically insured against drought by reservoir system at Rangeley Lakes. Fall of 182 feet in less than a mile. Nearest seaport, Portland. Ample railway connections. Unsurpassed location for PULP, PAPER and PAPER consuming MILLS. Over 1,000,000 acres timber, suitable for pulp, in valley above the Falls, drained by the Androscoggin. Complete facilities for handling same. Special inducements offered. Lower rates for POWER and MILL SITES than made elsewhere. For prospectus, terms and further information, address

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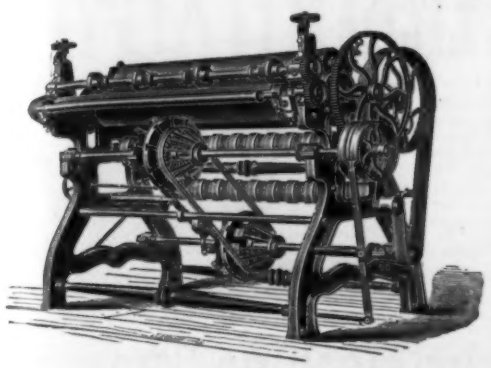

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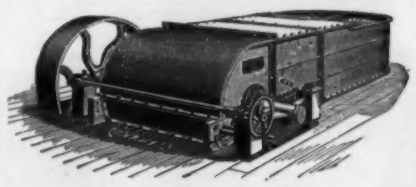

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ROLL BARS,
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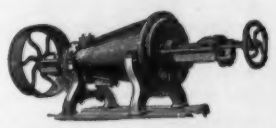
RAG CUTTER KNIVES,
PAPER CUTTER KNIVES,
BRASS VALVES,



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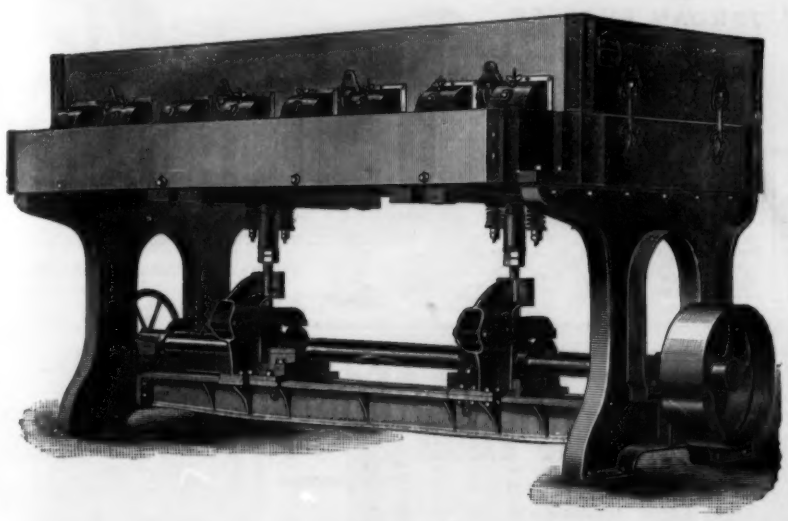

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NOISELESS PULP SCREEN.

SIMPLE, DURABLE, PERFECT, COMPACT.
COMPLETE, NOISELESS, NO STRINGS, LESS POWER.

Plates are sure to last longer, and but two-thirds the number being necessary. No waste of stock when washing up.

Occupies a small space; a simple, solid built flooring the only foundation necessary.
Six (6) hours' time only required to put in position ready for work.
Excellent work accomplished with eight (8) plates and 11-1000 screen plate.
In ordering the Screens no particulars are required.

IT HAS NO EQUAL AS TO SCREENING QUALITIES, CAPACITY AND SAVING OF STOCK.

WARRANTED. THREE MONTHS' TRIAL GIVEN. ADDRESS

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Manufacturers of STRAW BOARDS, PULP LINED BOARDS, Lined Straw Boards, Combination Boards,

BINDERS' BOARDS, FRICTION BOARDS.

"LIGNISTRA" (A SUBSTITUTE FOR PLASTER.)

BUILDING BOARD, PLAIN BOARD, TARRED BOARD, WATERPROOF BOARDS,
Barrel Layers, Peach Baskets, Egg Cases and Fillers.

Popular Prices! Attractive Terms! Prompt Shipments!

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HOLYOKE, MASS.

EASIEST RUNNING.
STRONGEST MADE.

Over Four Hundred in use by the Leading Paper Mills of the United States, Canada and Mexico.

THE CELEBRATED HOLYOKE ROTARY BLEACH BOILER.

We also manufacture all kinds of STEAM BOILERS, Barlow Kiers, Penstocks, Wheel Cases, Stand Pipes, Tanks, Castings, Smoke Stacks, Grate Bars, Boiler Fittings. All Work Warranted.

Located in Holyoke, "the Paper City," for over thirty years, we have made a specialty of Plate Iron products for use in paper mills. We cheerfully quote prices.

Address T. H. SEARS, Manager.

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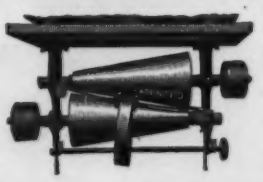
For changing and regulating the speed of machines automatically or by hand.



The speed can be quickly and easily varied while the machine is running.

Address the Evans Friction Cone Co., 85 Water St., Boston.

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Paper Machinery.

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THE WENDLER-SPIRO PATENT ACID PLANT

IS THE SIMPLEST, MOST ECONOMICAL AND MOST RELIABLE APPARATUS IN USE TO-DAY.

No Pumps! No Agitators! No Smell! No Repairing!

Over 20,000 Gallons of Strong Acid Produced Daily. Acid can be Regularly Produced of any Required Strength.

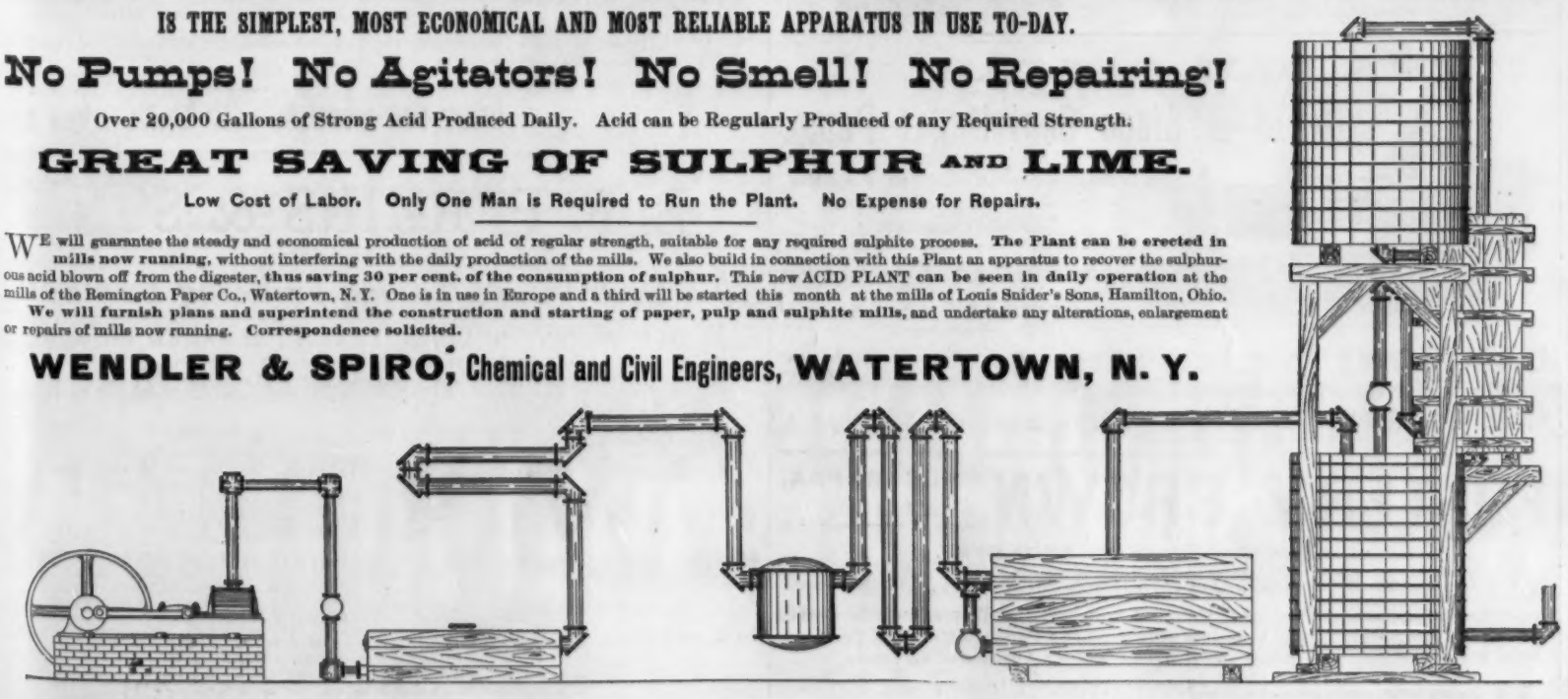
GREAT SAVING OF SULPHUR AND LIME.

Low Cost of Labor. Only One Man is Required to Run the Plant. No Expense for Repairs.

WE will guarantee the steady and economical production of acid of regular strength, suitable for any required sulphite process. The Plant can be erected in mills now running, without interfering with the daily production of the mills. We also build in connection with this Plant an apparatus to recover the sulphurous acid blown off from the digester, thus saving 30 per cent. of the consumption of sulphur. This new ACID PLANT can be seen in daily operation at the mills of the Remington Paper Co., Watertown, N. Y. One is in use in Europe and a third will be started this month at the mills of Louis Snider's Sons, Hamilton, Ohio.

We will furnish plans and superintend the construction and starting of paper, pulp and sulphite mills, and undertake any alterations, enlargement or repairs of mills now running. Correspondence solicited.

WENDLER & SPIRO, Chemical and Civil Engineers, WATERTOWN, N. Y.



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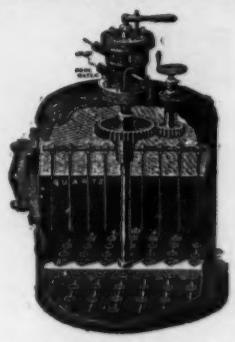

Pressure and Gravity Systems.

WE CAN DO YOU GOOD.

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Cork Covered Steam Pipes.

A technical dissertation on the superiority and value of cork as a boiler covering has been published by a French engineer. One variety of such covering, which he has found to be efficient, consists of pieces of cork, shaped to fit the different sizes of pipes, with radial joints, similar to the staves of a barrel, which are placed around the pipe and for the time bound to the pipe by strings. After the pipe so covered has been used with steam for some time, and the cork been sufficiently dried, the crevices are filled in and the string replaced by wire—elbows being also covered in the same manner—and, after the covering is finally fixed, the pores and crevices are closed by a coat of paint or lime wash.

In another arrangement, as proposed, rectangular blocks of cork, about one and one-fourth inch wide, and varying in thickness from one-fourth of an inch for small pipes to five-eighths of an inch for pipes from 4 inches in diameter and upward, and cemented to strips of cloth by an india rubber solution, are used; the bands are lapped spirally around the pipes and elbows, and covered by another band of waterproofed canvas lapped in the same manner, so as to cover the joints of the cork bands, the whole being afterward covered by a thick coating of paint or tar.

THE ORIGINAL Steam Exhaust LYMAN INVENTOR OF Pipe Heads.

STEAM ESCAPES.

Dry and Noiseless.

GALVANIZED IRON FLANGED PIPE FOR EXHAUST STEAM, &c.

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Is the most Simple, Strong, Durable and Economical Wheel manufactured.

We have recently taken out letters patent on an entirely new device for taking out all lost motion between gate stem and register in case, and is particularly adapted to using governors (see cut above).

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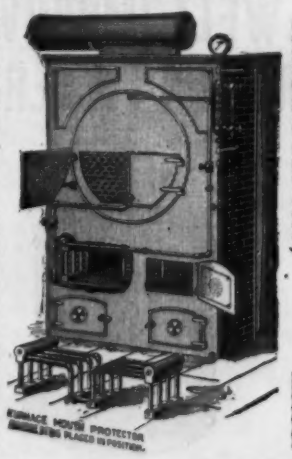
THE LAMPREY Boiler Furnace Mouth Protector Co.

GEORGE L. DAMON, Treasurer.

SALESROOM: 108 & 110 SUDBURY ST., BOSTON.



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THIS device prevents the constant burning out of cast iron cheeks and arc plates around furnace mouths, and avoids burning the front of boiler and tube sheet rivets, saves leakage and obviates shutting down for expensive repairs. It also utilizes a portion of the intense heat about furnace mouths for heating the feed water, and effects a saving in fuel of from 5 to 15 per cent. over old methods of attaching cast iron plates to furnace mouths. Send for particulars.

NEW AMERICAN TURBINE.

FROM SIX TO SIXTY-SIX INCHES DIAMETER.
Are in practical operation under heads from 4 to 100 feet head; are strong, durable and give high efficiency.

BEATING ENGINES
Cast Iron or Wood Tubs.
Made heavy and strong, double lightered, with well made Cone Washers.

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Successors to STOUT, MILLS & TEMPLE,
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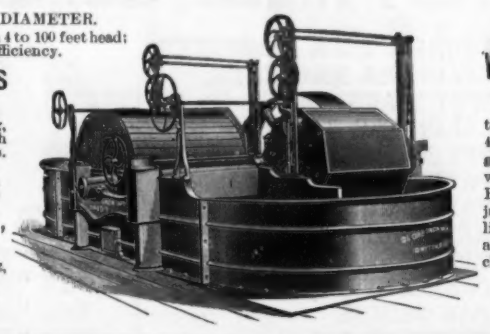

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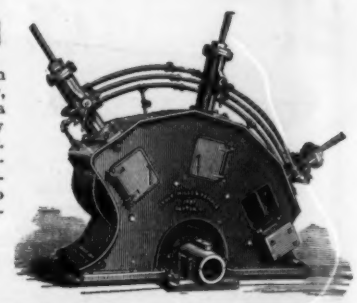
WOOD PULP GRINDER

Superior in construction to any made. Capacity, 4,000 to 6,500 pounds extra good pulp per day, dry weight, per each grinder. Hydraulic feeds, fine adjustments; strong and reliable in every way. Two and three pocket machines.

Descriptive Catalogue Sent Free.



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For Mining and Concentrating Works, Coal, Stone and Ore Screens, Gas and Water Works, Clay and Sand Screens, &c.

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Perforators of All Metals.

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AN IMPROVED SYSTEM - GREAT ECONOMY - LARGE CAPACITY - HIGH OR LOW SPEED.
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THE PORTER-HAMILTON ENGINE.
75 to 2,000 HORSE-POWER.
THE STRONGEST ENGINE IN AMERICA
Simple, Economical and of the Best Workmanship.
Write for Catalogue to the Builders,
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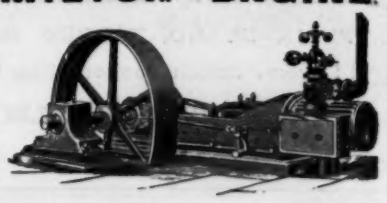

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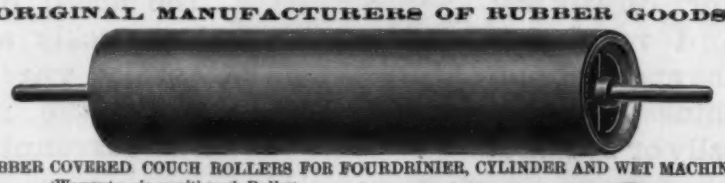
ORIGINAL MANUFACTURERS OF RUBBER GOODS.



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(Warranty given with each Roller).

Also make *Rubber Covered Press and Sizing Rollers, Rubber Belting, Hose, Packing, Deckel Straps* and all kinds of *Rubber Goods for Mechanical Purposes.*

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THE OLD RELIABLE
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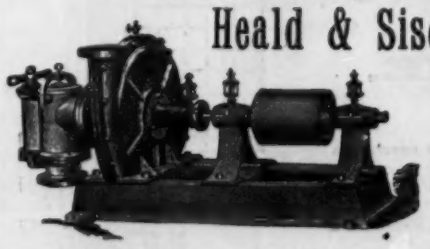

MORE OF THEM USED BY PAPER MAKERS THAN OF ALL OTHER KINDS COMBINED.

More than Fourteen Thousand in Use.

CAUTION!—Other pump makers are advertising their wares as the "Baldwinsville" Centrifugal Pump. This claim is fraudulent and intended to deceive. We are the only manufacturers of Centrifugal Pumps in Baldwinsville, and we warn all purchasers against parties falsely claiming otherwise.

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SPECIALTIES:

Improved Paper-Coating Machines; Hanging Machines. and Power Reels for Coated Paper; the Merrill-Foster Noiseless Pulp Screens; Paper Slitting and Trimming Machines; Hardened and Ground Slitters; Automatic Elevators.

BUILT UNDER OUR OWN SUPERVISION.

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MANUFACTURERS OF WINDSOR LOCKS, CONN.,

JORDAN ENGINES,
DRYERS,
Rotary and Stuff Pump Reels,
RAG CUTTERS,

Screen and Vats, Engine Rolls, Suction Box Plates, Tube Rolls, Stock Boxes of all kinds, Roll Bars, Bed Plates and Rag Knives.

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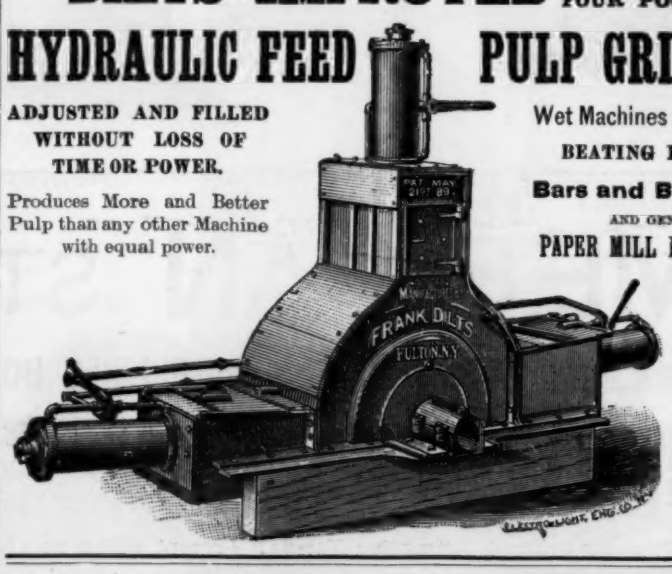
HYDRAULIC FEED PULP GRINDER.

ADJUSTED AND FILLED WITHOUT LOSS OF TIME OR POWER.

Produces More and Better Pulp than any other Machine with equal power.

Wet Machines and Screens.
BEATING ENGINES,
Bars and Bed Plates
AND GENERAL
PAPER MILL MACHINERY.



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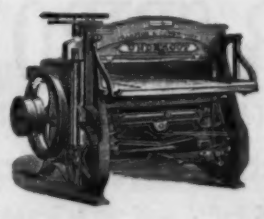

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Paper Cutting Machine.
Specially Adapted to Paper Mill Work.
IN USE IN THE LARGEST AND BEST MILLS IN THE COUNTRY
SEND FOR CIRCULAR.

CRANSTON & JONES, 57, 59, 61, PARK STREET, New York.

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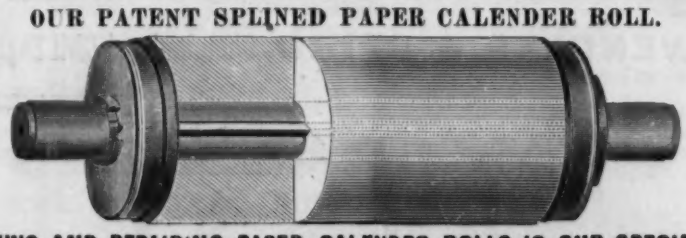
50% Guaranteed Saving by Using Our Rolls.

OUR PATENT SPLINED PAPER CALENDER ROLL.



MAKING AND REPAIRING PAPER CALENDER ROLLS IS OUR SPECIALTY.

We manufacture our own Paper and can give satisfaction at bottom prices.

OUR SPLINE CAN BE APPLIED IN THE REFILLING OF OLD ROLLS.

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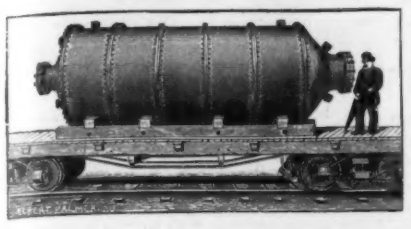
DE-OXIDIZED BRONZE DIGESTERS FOR MAKING SULPHITE FIBRE



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(COVERED BY PATENTS, UNITED STATES AND EUROPE).

BEST METAL. BEST CASTINGS. PERFECT FINISHING. REASONABLE PRICES.

ACID PLANTS furnished, *DESIGNS FOR MILLS, EXPERT MECHANICS AND CHEMISTS,* to put all in perfect working condition, producing first-class Fibre.

DE-OXIDIZED BRONZE SUCTION BOX and SCREEN PLATES, ROLLS, JOURNAL BEARINGS, &c., superior to all others, every way.

Also FOURDRINIER and CYLINDER WIRES, guaranteed 25 per cent. better than any on the market.

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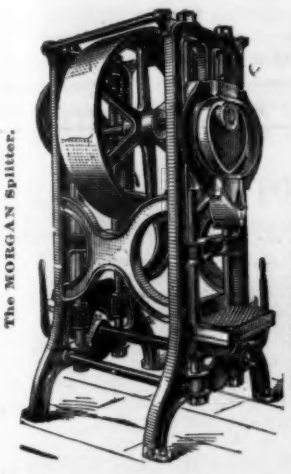

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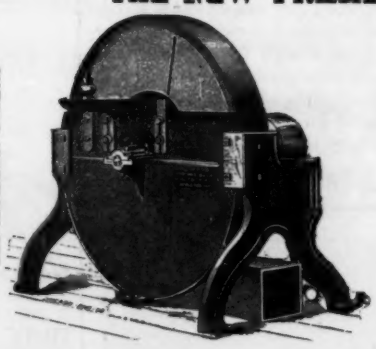

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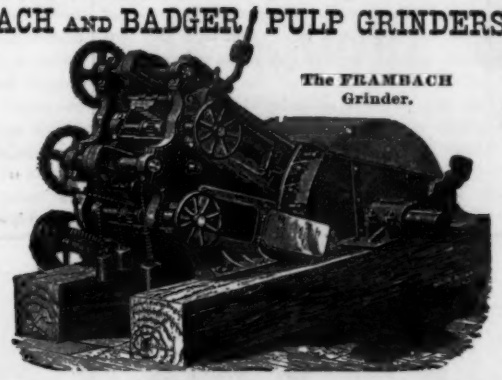

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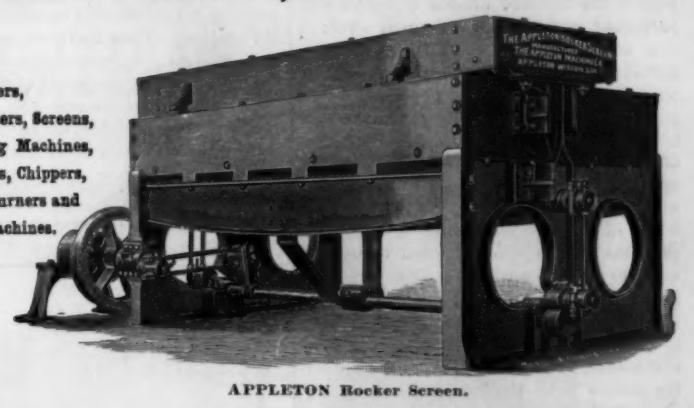

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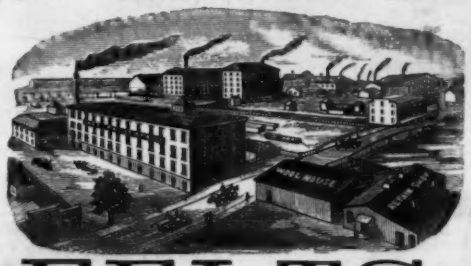

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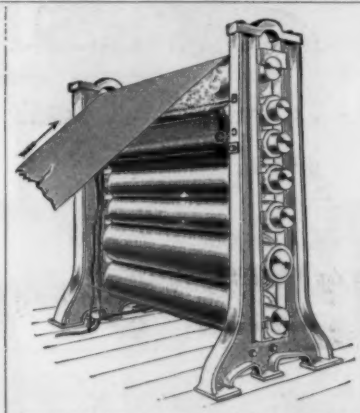
PRESS FELTS AND JACKETS FOR ALL KINDS OF PAPER.

TRY OUR HARPER FELTS. THEY ARE THE BEST MADE FOR ALL GRADES OF PAPER.



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AEROPHOR PAPER DAMPENER.

A MODERN DEVICE FOR DAMPENING PAPER.

It produces a great amount of vapor, which is thrown upon the paper—one side or both as desired—in large or small quantities.

IT IS VERY SIMPLE, EASY TO OPERATE, BUT VERY EFFECTIVE.

The moisture discharged is so fine and the distribution of the vapor so even that the device is found of much value on news, book or manilla papers.

The Aerophor Paper Dampener is now in successful operation in some of the largest paper mills.

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MANUFACTURERS OF THE CELEBRATED

PENINSULA WOOD PULP GRINDSTONES

For Grinding Wood Pulp.

The grit of the stone from our Peninsula Quarry is particularly adapted to grinding **Wood Pulp.**

All the **Wood Pulp Manufacturers** who have used these stones say they give general satisfaction, and are much superior to any **imported** stone. We manufacture stones for the following machines: The Warren-Curtiss, Brokaw, Frambach, Valley Iron Works, Dayton Globe Iron Works Co., Lowville Iron Works Co., Frank Dilts and New England, Scott & Roberts, Eilers, and all others. In sending orders please be particular to give the exact dimension the stone must be. Give the diameter and face of stone, the diameter and depth of flange, where flanges are to be cut. State size of hole for shaft, and if round or square.

GLOBE VENTILATOR.

For Ventilating Mills, Dry Houses and Machine Rooms.

GLENS FALLS PAPER MILL COMPANY,
GLENS FALLS, N. Y., January 17, 1889.

GLOBE VENTILATING CO., TROY, N. Y.:

Gentlemen—We have several of your Ventilators in use, both large and small, which are giving good satisfaction, doing the work required of them.

Yours respectfully, &c., GEO. R. HARRIS, Secretary.

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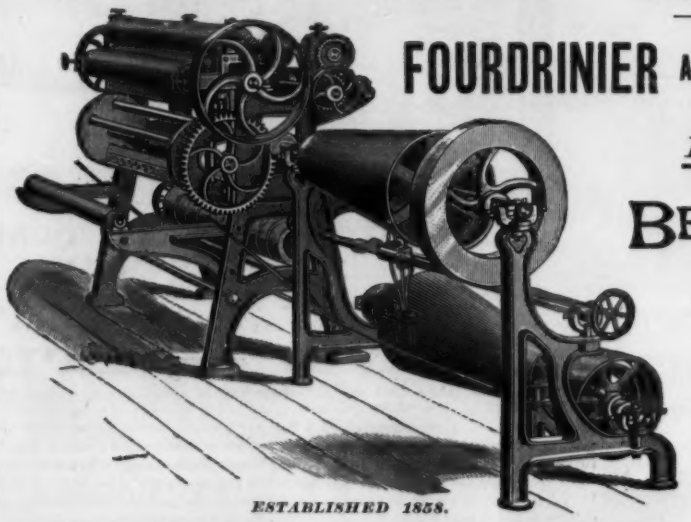

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Iron Tub and Wood Tub

BEATING ENGINES.

WET MACHINES,

Rag Cutters,

Water and Stuff Pumps,

&c., &c.

ESTABLISHED 1858.

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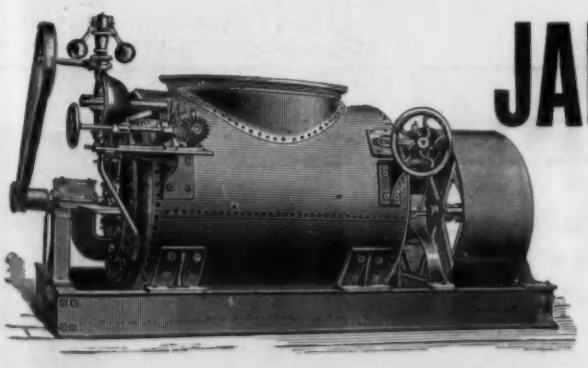

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Sizes in Operation: SIX inches to NINETY-SIX inches diameter, under heads ranging from 2 to 350 feet, in many of the finest paper mills of this country, one company using **Fourteen** and another **Twenty-seven** Leffel Wheels.

MANY STYLES AND VARIETIES ON HORIZONTAL SHAFTS.

The Company are now in better condition than ever before to supply these justly celebrated wheels with dispatch and promptness.

Send for their fine catalogue, nicely illustrated, and write them your wants fully. Address

THE **James Leffel & Co., Springfield, Ohio, U. S. A., or 110 Liberty St., N. Y. C.**

Making Fibre from Pine Needles.

A process for treating the leaves of pine and other coniferous trees, commonly known as "pine needles," for the purpose of producing fibre is founded upon the discovery that the organic growth of the pine needles occurs in layers of an entirely different material that requires different treatment. Thus the outer coating is of a hard, siliceous nature, somewhat similar to the surface of palm leaf, while the inner portions are of a resinous, gummy and pulpy nature, in which are embedded the fibres. This outer coating requires very active treatment to remove it, and yet if this active treatment be continued through the inner layers it eats away and destroys the strength of the fibre, so that it does not possess sufficient strength to stand the subsequent mechanical separation and is weakened and broken. On the other hand, if a less active treatment is employed from the beginning of the process the siliceous coating is not attacked and the heat of the boiling process solidifies and carbonizes the gums and makes the stock hard and brittle without separating the fibre.

This process is designed to overcome these difficulties. The pine needles are first placed in a suitable vat or tank, made of cast iron or other suitable material and of any desired size and shape. The tank is provided with a coil of perforated steam pipe, in the bottom, around the sides and extending out through the tank, where it may be fitted with a valve for controlling the admission of steam to and shutting it off from the coil. After the needles are placed in the tank a grating or other cover is made to bear down upon them by means of screws, applied to the ends of any number of binder bars, so as to tightly compress the needles in the vat or tank. A water inlet valve connection is furnished near the top of the tank, and a suitable water or solution outlet valve connection at its bottom.

When the tank has been provided with a charge of the needles, preferably in a green state, the grating is forced down by the screws until the needles are tightly compacted into a small compass. The object of this is to get them in such small bulk as to allow a minimum amount of an alkaline solution to be used, thus economizing this reagent. A solution of caustic soda in water is then allowed to flow into the tank by the inlet valve connection until its level rises nearly to the grating. The strength of the solution is preferably about 3 to 4 per cent. of soda to the weight of the charge of the needles; but a slight variation of the quantity either way may be permitted. Steam is then turned on through the coil and the contents of the vat is boiled hard at 212° Fahr. for ten or fifteen minutes, or until the ebullition of the water causes a head of foam to rise up above the level of the grating, where it remains. This step constitutes the active treatment necessary to remove the outer siliceous coating of the needles, and the foam is the result of the glutinous mass of soluble glass formed by the union of the soda with the silica, forming silicate of soda. After the few minutes of active boiling the screws are released and the grating is raised and the mass allowed to expand and the liquor allowed to soak through the entire mass homogeneously. The steam is then partially cut off, so that boiling entirely ceases, and only enough steam is left to maintain the whole mass in slow digestion for about ten hours at a reduced temperature, which may vary from 70° to 208° Fahr. This reduced temperature effects the gentle saponification and solution of the gummy and pulpy matters, and while converting and dissolving them sufficiently to permit their removal does not attack the cellulose or woody fibre and does not weaken its tensile strength, but leaves the fibre the full length of the needles, strong and tough. After the needles have been thus cooked the solution is drawn off from the tank through the outlet valve.

The cooked needles are then subjected to any number of successive washing and steeping operations in clean water, subject to the action of heat. Thus, for instance, the drained tank is filled with clean water and the steam is turned on, gradually increasing the heat of the water, which floods the cooked needles, to from 180° to 200° Fahr.; the steam is then shut off and the water is allowed to remain in the tank and cool gradually for about twelve hours, more or less, as desired, and after the water has cooled sufficiently it is drawn out of the tank. The vat or tank is filled a second time with clean water and the steam turned on to gradually heat it to a temperature of from or between 150° to 180° Fahr., more or less, and afterward the steam is shut off and the water allowed to remain in the tank and cool, as before, and when sufficiently cool is run off from the tank. This second washing and steeping of the product will be at a lower temperature than the preceding one. After this the tank is usually filled a third time with clean water, steam turned on and the water heated to a still lower temperature than the preceding soaking—say to about or between 100° to 150° Fahr.—and then by shutting off the steam the water is allowed to cool gradually. This completes the soaking process, and the last or third water may either be run off in a few hours or be allowed to remain on the needles for several days without injury to them, and they may then be removed from the tank. The needles now present a transparent amber colored appearance and contain only the cellulose of fibre, and are ready to be subdivided into filaments by mechanical action.

One or more of these soakings might be dispensed with, and the needles or product be removed for working after the second soaking operation; but the fibre will not be as clean or bright, and the longer the needles soak the better and cleaner will be the product or fibre. They furthermore might be soaked as many times as desired, and each time the needles are soaked they will become more transparent and the fibre cleaner. The temperature of the water in all of these washings must not be allowed to fall below 70° Fahr.

The object of the repeated washings at successively lower temperatures is to secure the gradual shrinkage of the fibres, and the gradual closing of the cells and pores and the squeezing out, by contraction, of the gummy matter from the cells into the surrounding warm solution, so that it may be drawn away and the fibre left perfectly clean.—*Manufacturer and Builder.*

Making Transfer Graining Paper.

A machine has been devised for making transfer graining paper, for the use of painters and others, by which the expensive hand graining in imitation of wood is dispensed with and by which any desired kind of grain can be produced at a considerable saving in time and labor. This machine comprises a pattern cylinder, a transfer cylinder working in contact therewith, guide rollers for the paper, a feed device for moving the paper over the transfer cylinder, a cleaning roller in contact with the transfer roller and a heating device below the transfer roller.

The pattern cylinder is supplied with the required color from a color fountain by a number of distributing rollers, which transfer the ink to the surface of the cylinder. At the lower part of the pattern cylinder are arranged two blades or doctors set close to the surface of the cylinder so as to take up the surplus color. The pattern cylinder is made of brass or other suitable material and is engraved according to the grain of the wood which is to be produced on the transfer paper, the grain being engraved by hand or produced in any other approved manner. A transfer cylinder is rotated in contact with the pattern cylinder and at the same speed therewith, it being made of the same diameter as the pattern cylinder. It is preferably made of elastic material similar to the inking cylinders employed in printing presses.

Below the transfer cylinder is arranged a heating device, by which the surface of the transfer cylinder is kept warm, a suitable guard device of corrugated sheet metal or gauze being interposed between the cylinder and the heating device, so as to prevent the direct contact of the flame with the transfer cylinder and injury to the latter. The heating of the surface of the transfer cylinder has the advantage that the color is more readily taken up by it from the engraved pattern cylinder and transferred to the paper, which is supplied from a suitable roll, and which is held in contact with the transfer cylinder by means of a guide roller.

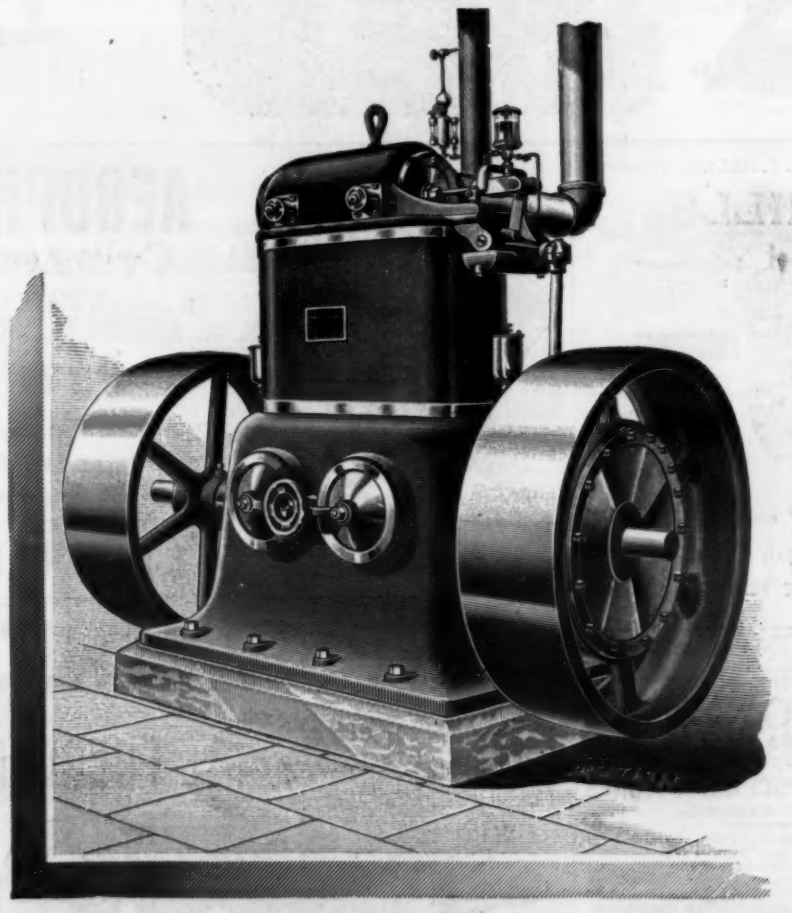
A cleaning roller is rotated in contact with the surface of the transfer cylinder, preferably at a somewhat greater speed than the same. This roller is made of steel or other suitable metal, and serves by its contact with the transfer cylinder to take up any color which remains thereon. This color is readily taken up by the roller, owing to the difference of temperature between it and the surface of the transfer cylinder, the higher temperature of the transfer roller permitting the ready transfer of the surplus color from its surface to the surface of the metal roller, which is gradually covered with a thin film of color, which is removed therefrom from time to time. The transfer cylinder is thereby in a condition to be favorably acted on by the heating device so as to be ready for receiving and transferring the color supplied by the pattern cylinder.

The paper to which the desired grain has been transferred in the proper color is conducted from the guide roller over a second guide roller to a feed device, which is arranged in contact with the under side of the paper and composed of an open box to which suction is applied by a suitable apparatus, and of an endless perforated belt guided over suitable rollers, one of the rollers being rotated by a belt and pulley transmission. By the suction exerted on the paper by the suction apparatus the paper is drawn into contact with the endless perforated belt and moved simultaneously forward by the motion imparted to the belt, so that a feeding device for the paper is obtained without the use of feed rollers, which are not applicable in this case, as the upper surface of the paper is covered with the moist grain transferred thereto. The feed motion of the paper is so regulated by varying the speed of the motion transmitting belt that it is moved forward at the same speed as the transfer cylinder, so that the design on the paper is not blurred or injured, but is transferred thereto in a clear and distinct manner.

From the feed device the paper is transferred to the drying room, in which it is hung up on sticks supplied from a stick box to an endless belt in the manner well known in the printing of wall paper, glazed paper and the like. The speed of the mechanism by which the paper is hung up in the drying room is so timed that a regular forward feeding of the paper in the drying room takes place.

The color employed in making the transfer graining paper is of such a nature that a number of transfers can be made from the same, which is graduated by the depth of the pattern engraved on the pattern cylinder.

By this machine transfer graining paper can be manufactured by a continuous process, so that it can be furnished in rolls of considerable length and at a cheaper rate than by methods heretofore in use.



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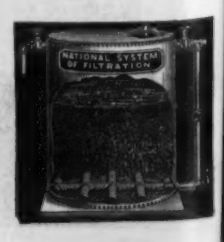

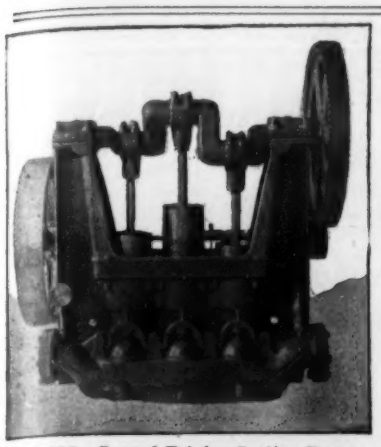

Fig. 956. Geared Triplex Suction Pump.

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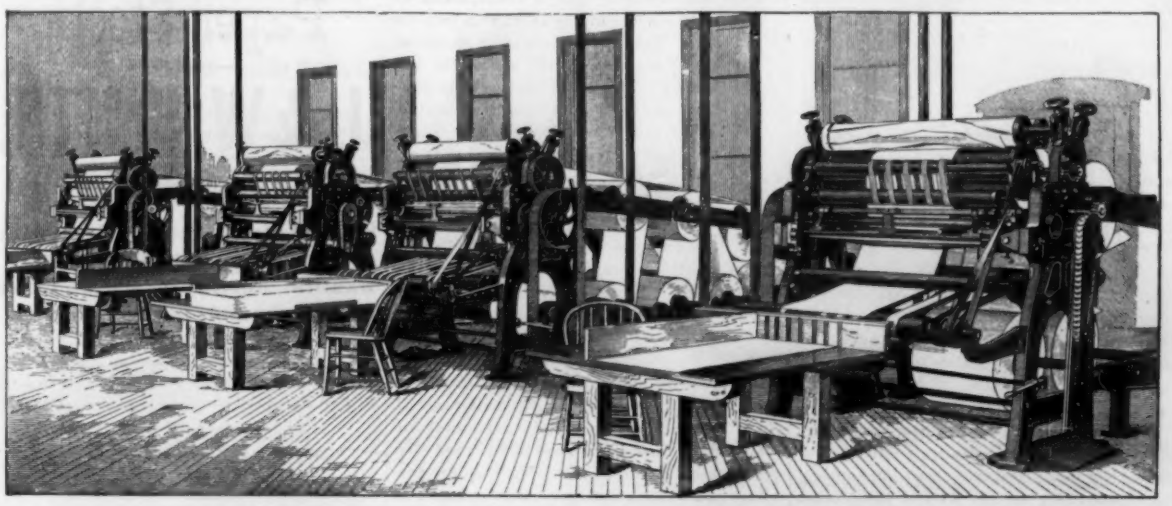

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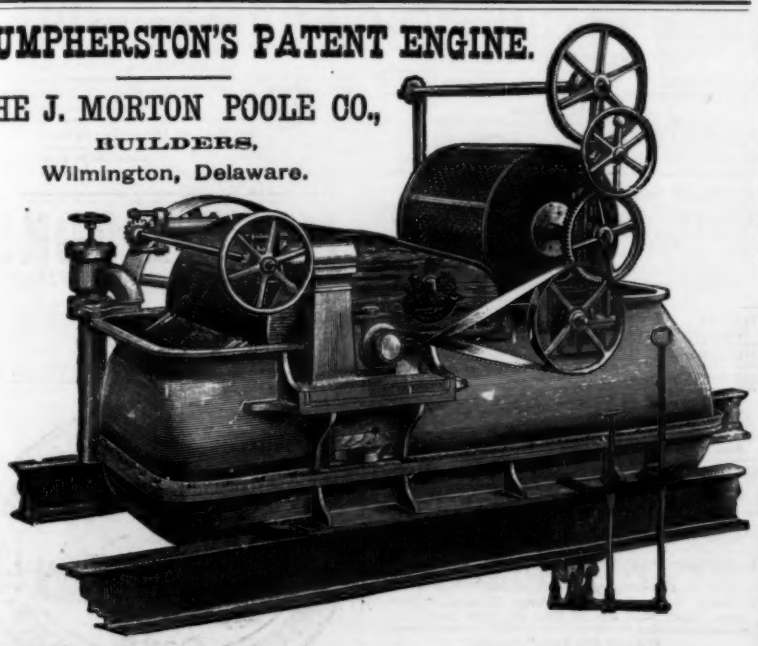

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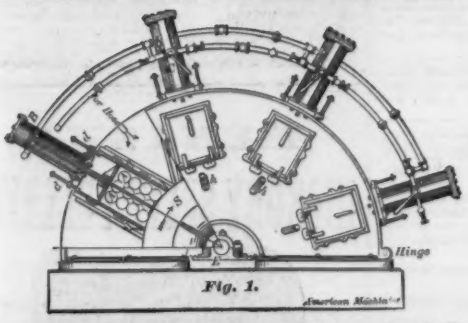

Fig. 1.

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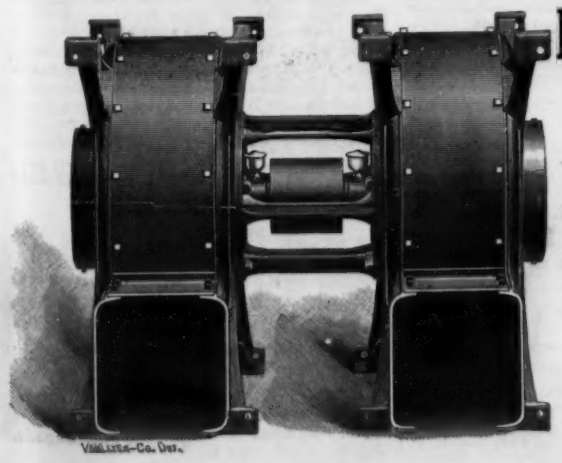

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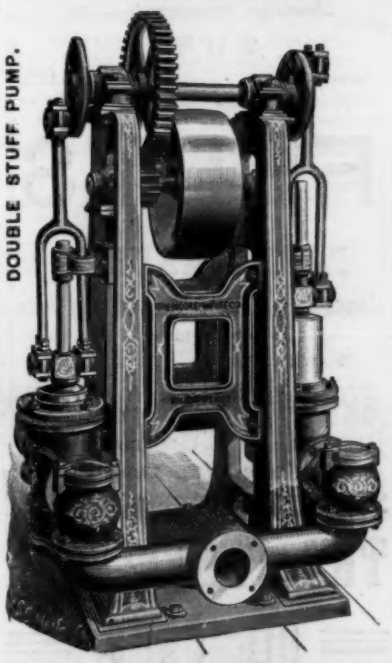

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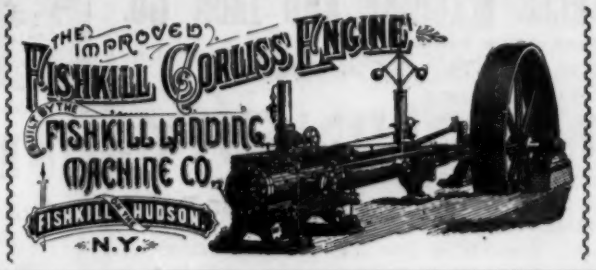

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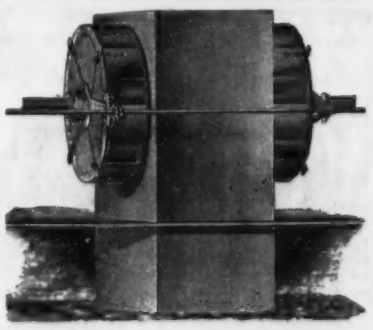

Preserving Building Stone.

After the many attempts and failures to find some method that will arrest the disintegrating agencies which affect our building stones, it is satisfactory to know that a preservative solution of a kind that can readily be applied to stone blocks on a large scale has been found, which, from the experience gained by ten years' use in France, Switzerland, Italy and other Continental countries, promises to effect a remedy at once preventive and preservative. Many of our scientific readers are acquainted with the methods and processes that have been suggested and applied, with more or less success, some of them like paints or varnishes, others that act mechanically or like silica, and a third kind of processes which operate both mechanically and chemically, like applications of alkaline silicates. The objections to the first named are that a paint or stopping has the disadvantage of discoloring the stone, imprisoning the moisture, thus causing disintegration by the action of frost, and requiring repeated applications.

The second class of remedies, while they fill the pores with an indestructible substance, do not preserve the intervening walls, and with regard to the third class the stone salts are soluble and absorptive of moisture, and, besides, cause a white efflorescence which disfigures the stone work. Unfortunately, these processes deposit in the pores of the stone a substance which, instead of preventing decomposition, serves to promote it, as in the case of "liquid glass" processes introduced by Fachs and Kuhlmann. The silica introduced becomes hardened; but the agent employed to decompose it—a salt of potash—effects the nitrification of the stone. A further drawback to some of these methods is that they require to be applied in the laboratory of the chemist; the stone, in fact, has to be placed in vacuum chambers or immersed, so that the solutions may effectually enter the pores; therefore they are expensive and often impracticable to adopt in the case of a large building.

The proposed remedy is one which certainly has the merit of obviating these disadvantages. It is called "fluate," an abbreviated term to denote the process known as fluosilification. Four conditions are laid down as essential to practical success in adopting any method to increase the resistance of building stones to atmospheric action. These are stated as follows: 1. The process should be largely chemical. 2. Whatever change is effected in the stone, the resultant products should be themselves insoluble. 3. The process should not alter the natural appearance of the stone. 4. Its cost should be moderate. Any preservative solution to be of practical value must be (1) "economically applicable on a large scale," and (2) "capable of application to the surface to be protected by means of a brush." After several years of investigation and experiment, a process discovered by the eminent French chemist Kessler has proved itself to comply with the conditions. The "fluate" process not only fulfills these requirements, but is said "to have solved the problem of the permanent preservation from decay of certain of our building stones and other materials."

The process is described as follows: "There exists in nature a mineral whose property is to remain unaltered when exposed to atmospheric influences. It is harder than marble and as transparent as glass. Employing methods known only to himself Mr. Kessler procures, by means of this mineral, an agent with which he dissolves silica. The silica being thus rendered liquid is in that state readily absorbed by the stone. By re-adding lime to the product the original mineral is reformed, and at the same time the silica is again liberated in a solid state. The lime necessary to bring about these reactions must be furnished by the stone itself, and as the degree of efficacy secured by the process depends upon the proportion of lime employed, the proportion of lime contained in any given stone is an important factor. No sooner does the liquid fluate enter into the stone than it solidifies, and instead of the one mineral, carbonate of lime, we get two other minerals, both of which are insoluble and unaffected by atmospheric influences." To render the fluate more penetrating certain oxides are used, and these become insoluble. These insoluble substances are unaffected by acids, the process prevents vegetation, the stone retains its natural appearance and is not rendered glossy. The cost, also, is said to be moderate; no skilled labor is necessary. One pound weight of crystals is sufficient to treat, with the required two dressings, at least 40 superficial feet of stone work.

The fluate can be applied from a ladder, like whitewash, no scaffolding is required, and two coats are sufficient. The pores of the stone are not sealed up so entirely as to prevent the moisture in the stone evaporating—a most important condition of the fluate process, and it is stated that delicate experiments have proved, under degrees from 50° to 380° Fahr., that the expansion and contraction of the fluated and unfluated stone are practically the same. Moist heat from 50° to 212° produced the same result, so that no injury can arise from unequal expansion. The capillarity tests also show that fluating reduces the absorption by capillary attraction of the open grained stones by one-half and of close grained stones by two-thirds. The fluate also hardens weatherings, stone floors and treads, rendering them more resisting to wear.—*Building News.*

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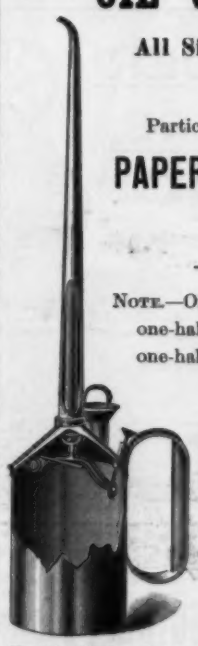

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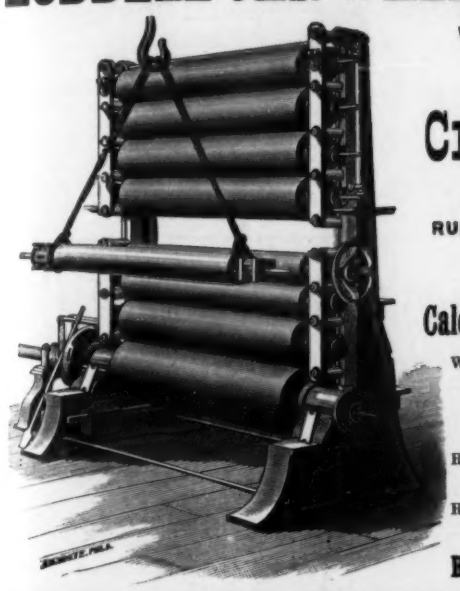

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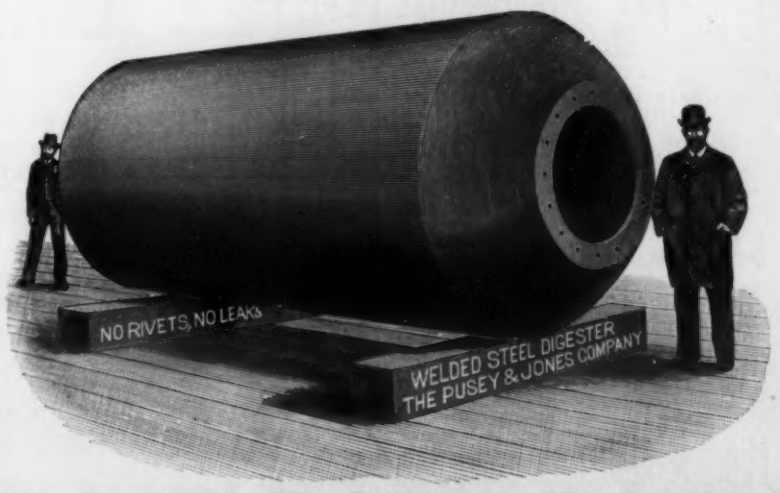

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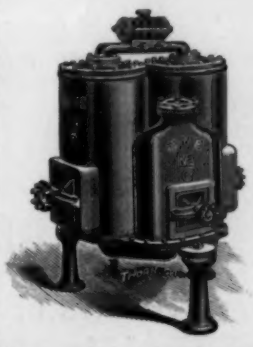

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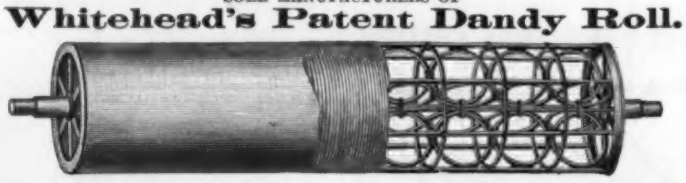
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